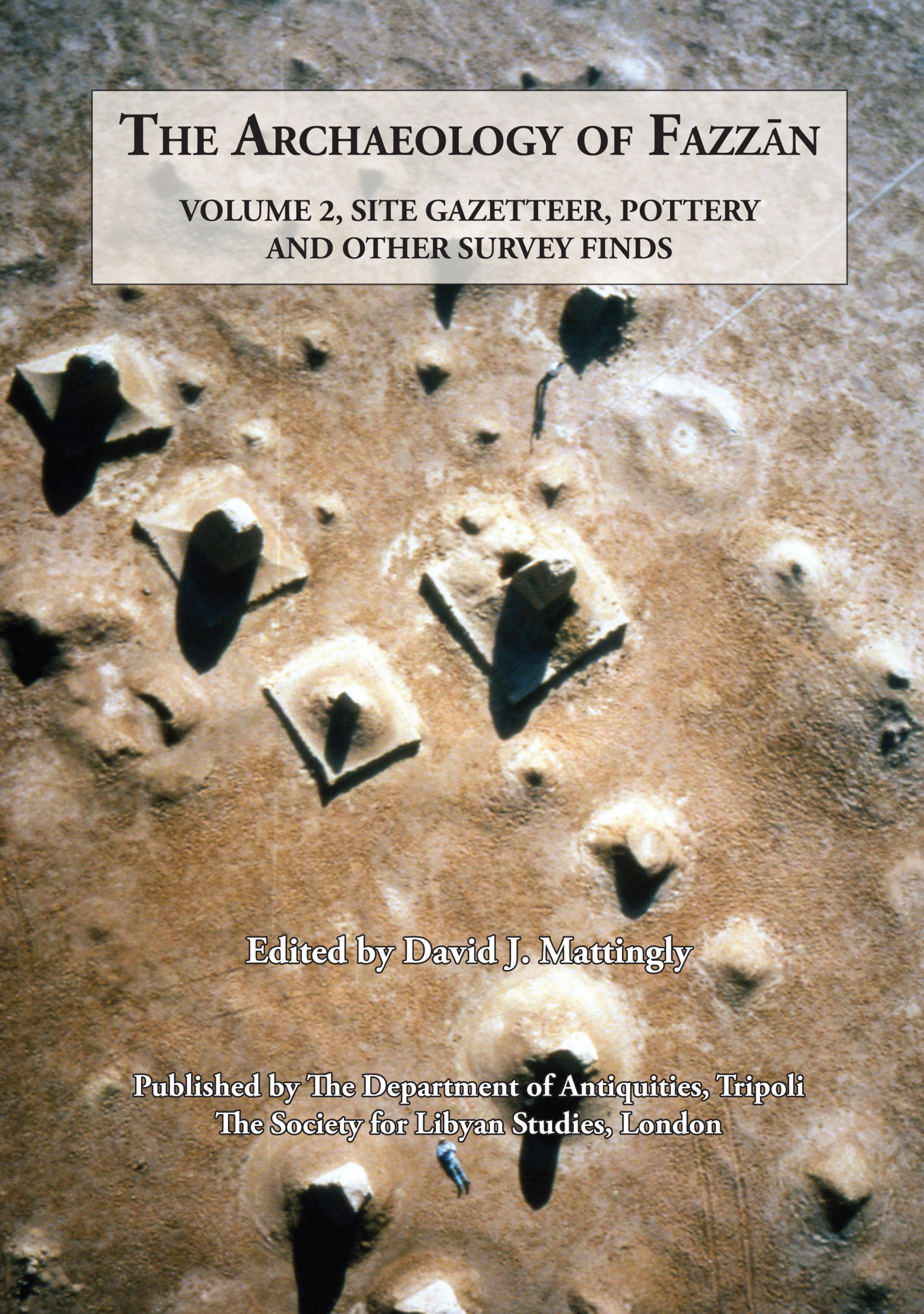

The Archaeology of Fazzān

Volume 2, Site Gazetteer, Pottery and Other Survey Finds

Edited by David J. Mattingly

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FRONT COVER: Kite air photograph of pyramid cemetery at al-Ḥaṭīya ELH 002. (photo: FP 2001).
BACK COVER: Stone *qasr* GEL 002 and the Ubārī sand sea (photo: CMD 1973).

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VOLUME 2, SITE GAZETTEER, POTTERY AND OTHER SURVEY FINDS

D. J. Mattingly, C. M. Daniels, J. N. Dore, D. Edwards, J. Hawthorne
(with contributions by others)

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Dedication

For the Fazzāni
whose heritage this book represents
and whose help and hospitality made it possible.

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CONCORDANCE OF PLACE-NAMES

Place-names have been, as far as possible, transliterated following Encyclopaedia of Islam (E.I.) conventions. In some cases, orthography remains uncertain, while the transliteration of non-Arabic place-names also presents some problems. Some well-established forms have been sacrificed in the interests of internal consistency (for example, Germa for Jarma). The list is arranged in two parts: first the alphabetical listing of place-name forms used in these volumes, and second a listing of older or alternative forms, mainly using the Italian or French colonial transliteration schemes (these are given in italics).

Form in AF reports	**Variant spellings**
al-Abyaḍ	*el-Abiad, el-Abiod*
An Amīnān	*Aghmenān, Agemennan*
Agīf	*Agif, Ageef*
Aghram Nadarif	*Ighram Nadārēf*
Aīr	*Aïr*
Āqār	*Aggar, Agar*
ʿArq Wān Kāsā	*Erg Wan Kassa*
Bāb al-Maknūsa	*see Maknusa*
al-Bakhī	*el-Bakhkhi, el-Bachi*
al-Bawānis	*el-Bouanis*
al-Bdayir	*el-Bdêr*
Bilmā	*Bilma*
Bin Ḥārith	*Ben Herath, Ben Haret*
Bintbaya	*Bentbaya, Bintbayah, Gasr Bendbeia*
Biʾr Baqqārā	*Bir Baghira*
Birgin	*Berghin, Berghen*
al-Birkat	*el-Barkat*
Brāk	*Brayk, Brak, Brach*
Būdrinna	*Budrina*
Bū Nijīm	*Bu Ngem, Bu Njem, Bunjaym*
ad-Dākhla	*Dakleh*
ad-Dlīm	*Dlem, Dulaym*
Dūjāl	*Dujial, Doujal*
Dahān Murzuq	*Edeyen Murzuq, Edeien, Edeiyen Mourzouk*
Dahān Ubārī	*Edeyen Ubārī, Edeien, Edeiyen Ubari*
ad-Dīsa	*ad-Dīsah, ed-Disa*
al-Fakhfākha	*Fakfaka*
Fazzān	*Fezzan*
al-Fjayj	*Fjej, el-Fejej*
al-Fugār	*Fougar, al-Foug, Fougar*
al-Fuqhā	*el-Fogaha, el-Fougaha, el-Fogar*
Gabr ʿAwn	*Gabr On, Gabr Oun*
Gāo	*Gaw*
Ghadāmis	*Gadames, Ghadames*
Gharyān	*Gharian, Garian*
Ghāt	*Ghat, Gat*
al-Ghrayf	*el-Greifa, el-Gherefa, el Graifa, al-Qraifa*
Ghuddwa	*Goddua, Ghedoua, Ghuddurva*
al-Ḥajāra	*el-Hajara, Hagiara*
al-Ḥamāda al-Ḥamrāʿ	*Hamada el-Hamra*
al-Ḥaṭīya	*el-Hatiya, el-Hatia, el-Hatir*
al-Ḥufra	*Hofra*
Hūn	*Hun, Hon*
Ibrayk	*Brech, Brek*
Idrī	*Edri, Idrī*
Ikhlif	*Cleff, Chlef, Ikhlayf*
In Ṭafārāt	*I-n-Tafarat*
al-Jabal al-Akḥḍar	*Gebel el-Akdar*
Jabal ʿAwaynāt	*Gebel Uweinat*
Jabal al-Ḥasāwana	*Jebel el-Hassaouna*
Jabal as-Sūda	*Jebel es Souda, Gebel es-Soda*
Jabal Bin Ghanīma	*Gebel Ben Ghnema*
Jabal Nafūsa	*Gebel Nefusa*
al-Jadīd	*el-Gedid*
Jādū	*Giado*
al-Jaghbūb	*Jiarabub, Giarabub, Jaghbub*
Jālū	*Jalu, Gialo*
Jarma	*Germa, Djerma, Jerma*
Jānit	*Gianet, Djanet*
Jīra	*Jeerah*
Jirba	*Gerba, Djerba*
al-Jufra	*Giofra, Jofra*
Jurāra	*Gurara, Gourara*
Kānim	*Kanem, Kanim*
Kāno	*Kano*
Kāwār	*Kaouar*
al-Kharaʿiq	*el-Charaig, el-Kharaig*
al-Khārja	*Kharga*
Knīr	*Kneer*
al-Kufra	*Koufra, Cufra*
Kukaman	*Cocaman*
Lārkū	*Larcu, Laroccu, Larokou*
Māfū	*Mafou*
Madrūsa	*Madrousa, Medrousa*
Maḥrūga	*el-Maharuga, Maharouga*
al-Maknūsa	*Macnusa, Bab el-Macnusa*
Mandara	*Mandarah*
Marāda	*Maradeh*
Matkandūsh	*Mattendoush, Mathendusc*
Massak Mallat	*Amsach, Msak Mallat*
Massak Ṣaṭṭafat	*Messak Settafet, Msak Sittafat*
Misqwīn	*Messegoûn, Meseguin*
Miṣurāta	*Misrata*
Murzuq	*Murzuch, Mouzouk,*

al-Qal'at	*al-Qalaah, Gelah*
Qaṣr ash-Sharrāba	*esc-Sceraba, Gasr esc-Sceraba*
Qaṣr Bin Dughba	*Qasr ben Dougba*
Qaṣr Būdrinna	*Gasr Budrina*
Qaṣr Lārkū	*Gasr Laroccu, Larocco*
Qaṣr Māra	*Gasr Mara*
Qaṣr Watwāt	*Gasr Uatuat, Qaṣr Waṭwāt*
al-Qaṭrūn	*el-Gatrun*
Qarāqra	*Gragra*
al-Qrāya	*el-Gheraia, Greia, el-Graiya*
al-Qṣīr	*Leksair, el-Gser*
al-Qurayyāt al-Gharbīya	*Gheriat el-Garbia*
al-Qurḍa	*el-Gorda*
ar-Raqayba	*er-Rgheba, Rugheba, Rqaybah, Reguiba*
Sabhā	*Sabha, Sebha*
Sāniat bin Huwaydī	*Saniat Ben Howedi*
Sāniat Jibrīl	*Saniat Gebril*
Sāniat Sulaymān Krayda	*Sāniat Suleiman Craida*
Sardalas	*Serdeles, see al-'Uwaynāt*
ash-Sharqiyāt	*Sharqiyyat, ech-Cherguiya*
Sīdī 'Alī	*Sidi Ali*
Sīdī Dāwud	*Sidi Daouad*
Sijilmāsa	*Sidjilmasa*
Surt	*Sirt, Sirte*
Sīwa	*Siwah*
Sūkna	*Socna, Suknah*
Tabalbala	*Tabalbala, Tabalbalet*
Tadrart Akākūs	*Tadrart Acacus, Akakous*
Tāhart	*Tahert*
Tajirhī	*Tajarhi, Tejerhi*
Takarkībah	*Tekerkiba, Tekertiba, Techertiba*
ad Tāmalālat	*ad Tamellat*
Tāmzāwa	*Tamzaua*
at-Tanāḥma	*At-Tanahmah, et-Tanahma*
Tāqallit	*Taglit, Taglilt*
Tarhūna	*Tarhuna*
Tāssīlī n'Azjar	*Tassili n'Ajjer*
aṭ-Ṭawīla	*Touila*
Tāwurgha'	*Tauorgha*
Tegrūtīn	*Teggrutin*
Tilimisān	*Tilimisan*
Timbuktū	*Timbuctu*
Timinhint	*Temenhind*
Tin Abūndā	*Tin Abunda, Tinabonda*
Tinda	*Tindā*
Tirbū	*Tirbu, Terbu*
Tmakrūt	*Tmakrout*
Tmissa	*Tmissa, Tmessa*
Tmissān	*Tmassan*
Trāghan	*Traghen*
Tripoli	*Tarābulus*
aṭ-Ṭrūnah	*Trouna, Bahrat et-Truna*
Tsāwa	*Tessoua, Tsawah, Tesaua*
Tubū	*Toubu*
Tūska	*Tosca*
Tuwash	*Twesh, Tuasc, Touach*
Tuwāt	*Tuat*
Tuwīwa	*Towiwa, Tuiua, Touioua*
Ubārī	*Ubari, Oubari, Awbari*
Umm al-'Abīd	*Umm el-Abid, Om la Beed*
Umm al-Arānib	*Umm el-Araneb, Oum el-Araneb*
Umm al-Ḥammām	*Oum el-Hamam*
Umm al-Ma'	*Oum el-Ma*
al-'Uwaynāt	*el-Uweinat, el-Aweinat, el-Auenat (see Sardalas)*
Wadai	*Wadai*
Waddān	*Waddan, Uaddan*
Wādī	*Ouadi, Oued*
Wādī al-Ajāl	*Wadi el-Agial, el-Ajal*
Wādī Barjūj	*Wadi Bergiug, Berjuj*
Wādī Būznā	*Wadi Bouzna*
al-Wādī al-Gharbī	*Wadi el-Gharbi*
Wādī al-Ḥayāt	*Wadi el-Hayat*
Wadi Ḥikma	*Wadi Hikmah*
Wādī Irawan	*Wadi Iraouen, Irowen*
Wādī al-Khurmān	*Wadi el-Khorman*
Wādī al-Nashw'a	*Wadi en-Nesciu*
al-Wādī ash-Sharqī	*Wadi esc-Scergḥi, ech Chergui*
Wādī ash-Shāṭī	*Wadi esc-Schatti, ech Chati*
Wādī Tanzzūft	*Wadi Tanessuft, Tanezzrouft*
Wādī Tillīzāghan	*Wadi Tilizaghen, Tilizahren, Telisaghe*
Wadī Tishūnīt	*Wadi Teshuinat*
Wādī 'Utba	*Wadi 'Utba, 'Atba, Etba*
Wādī Zallāf	*Wadi Zallaf, Zellaf*
Wān Afūda	*Uan Afouda*
Wān Muhūjjāj	*Uan Muhuggiag*
Wān Tabu	*Uan Tebu*
Wān Talīkīt	*Uan Telocat*
Waṭwāt	*Uatwat, Gasr Uatuat*
Wāw al-Kabīr	*Uau el-Chebir*
Wāw an-Nāmūs	*Uau en-Namus*
Zalā	*Zalla, Zella*
Zinkekrā	*Zinchecra*
as-Zirghān	*es-Zighen*
Zīzāw	*Zizaw, Zizau*
al-Zūwīya	*Zouayya, Zuaya, Zueia*
Zuwīla	*Zuila, Zawila, Zouila, Zuwayla*

FOREWORD

It is a matter of great satisfaction to OXY Libya, LLC to be associated with the publication of the second volume of the final report on the Fazzan Project's work in southern Libya. We have recently started our own exploration of a large contract area that includes a substantial part of the main survey zone of the Fazzan Project within its bounds.

Occidental carries out its activities worldwide based on a total respect for the environment, people and culture and in full compliance with a strict Code of Business Conduct, which mandates a high degree of ethics and transparency.

The exciting results obtained by the Fazzan Project open a window on a fascinating aspect of Libya's past – its rich desert heritage. The archaeological remains of the early Libyan civilisation, based on the kingdom of the Garamantes, can now be better appreciated both within Libya and in the wider context of Saharan studies. The amazing achievements of the Garamantian oases farmers are something to be marvelled at, considering the hostile climate and environment of the Libyan desert. There is also a message for the present in the ultimate decline of this civilisation, perhaps in part due to over-exploitation of non-renewable water resources.

This volume will be an invaluable point of reference for everyone interested in the desert heritage of the Sahara. The gazetteer provides a wealth of detail and type examples of the key archaeological sites of the Libyan desert. Similarly, the sections reporting on the finds provide a basic set of typologies of an array of different artefacts on which future work can build. Indeed there are many aspects of these site and artefact typologies that should be emulated in present and future archaeological mitigation studies being carried out in relation to the current oil development in Libya.

Our support for this publication reflects our strong commitment to assisting the Libyan Department of Antiquities in protecting and making better known the extraordinary heritage of the country. We would like to express our thanks to the National Oil Corporation of Libya and the Libyan Department of Antiquities for their support and assistance in this endeavour.

John Winterman
President and General Manager,
OXY Libya, LLC.

PREFACE AND ACKNOWLEDGEMENTS

This is the second of a projected series of four volumes presenting the combined results of two archaeological projects in southern Libya. The first of these started before I was even born in 1958 with the pioneering visit of Charles Manser Daniels [hereafter CMD] to Fazzān. He subsequently conducted 10 seasons of fieldwork ending in 1977, with a main focus on a 'lost civilisation' of the Sahara – the Garamantian kingdom (broadly contemporary with Graeco-Roman civilisation in the Mediterranean). Impressive as his interim publications on the Garamantes are, much remained unpublished at his death in 1996. When I started the Fazzān Project, following an intial visit that same year, I was aware of the huge potential to bring together the results of his project with the renewed work. What I had hoped would be done cooperatively with CMD, became an urgent rescue mission at his premature death. With key funding from the Leverhulme Trust, British Academy and the Society for Libyan Studies, work on the Daniels' archive took place alongside the new fieldwork, notably between 1999-2001 when David Edwards and John Hawthorne were employed as Post-Doctoral Research Fellows on the project. The work on the archive was split between the University of Leicester, where David Edwards worked under my supervision, and Newcastle, where John Hawthorne was supervised by John Dore. There were many meetings and much shuttling up and down the M1/A1.

What became apparent to us all very quickly was the absolute quality of the CMD archive. Although he had not brought his own work to full publication, the superbly organised and documented archive that CMD left us made the task comparatively straightforward (though predictably the timescale of producing these volumes has stretched beyond our initial optimistic estimates). Several other points also became clear to us. There was a huge amount of unexpected material in the archive – many important sites that the Fazzān Project had 'discovered' were already identified in the CMD archive, though CMD had never written a word about them in his interims. It was also clear that the recently accelerated pace of development and agricultural change in the landscapes of Fazzān was leading to great damage and destruction of sites that were in much more pristine state in the 1960s. The logic of combining the results of the two projects became all the stronger as a result of both these issues. CMD had clearly delayed publishing some of his key discoveries in the hope of returning to the field to obtain further information and plans of certain sites. The FP work was doing just that and offered many other enhancements to the baseline data and site plotting carried out by CMD. This volume presents the combined data-set for the wider pattern of settlement and activity in the landscapes of Fazzān. The excavations carried out by CMD and the FP will form the matter of the final two volumes. This has not been a seamless exercise – two projects carried out across a fifty year period, with varied recording methods and differing standards of analysis cannot offer a consistent and standard product. But it is my believe that the combined results, for all the gaps in knowledge and non-comparable aspects of the data, represent far more than the sum of the parts. This is a remarkable dossier of information about a fast vanishing Saharan landscape and will generate a new vision of the story of its people across time (and it will be clear that the story is about far more than the Garamantes alone). It cannot be a definitive picture, but it does represent a new baseline of archaeological knowledge of this central Saharan location. I am currently hoping to return to the field to do further work and I hope the book will also inspire others to undertake the essential follow-up work on the various component parts.

The work of Daniels (CMD)

The Daniels expeditions were funded by a variety of sources, including the British Academy, the Society for Libyan Studies, the University of Newcastle, the Pilgrim Trust, the Royal Geographical Society, the Lawrence Bequest, the Seven Pillars of Wisdom Trust, the Russell Trust, the Craven Committee Oxford, the Universities of Edinburgh and Cambridge. Grateful thanks to all of these funding bodies are recorded here.

The work was carried out in collaboration with the Libyan Department of Antiquities. A particular debt of gratitude is owed to the successive Under Secretaries, later Presidents, of the Department of Antiquities, for their support for the work. The creation of a southern Controllership of Fazzān in the 1960s was a vital step towards creating the conditions for CMD's project and he worked closely with the first Controller, Mohammed S. Ayoub, (1960-1969). A. M. Kilani, Dr Ali Abdusalem, Dr Giuma Anag and Dr Faraj al-Rashedy were other Libyan colleagues who participated in or assisted CMD's work.

Although CMD's work focussed primarily on the Jarma region of the Wādī al-Ājāl, in 1968 his mission accompanied a British army expedition to the Murzuq area, thanks to the good offices of Major P. G. Boxhall.

Known personnel of the CMD missions are as follows: Charles Daniels; P. J. Arthur; Eric Balley; (Dr) David Bird; (Professor) Tony Birley; (Dr) David Breeze; Olwen Brogan; David Browne; P.J. Carmody; Hugh Chapman; Miriam Daniels; John Gillam; Andy Gilson; (Dr) Bill Hanson; Mark Hassall; (Dr) John Hayes; (Professor) Barri Jones, (Dr) John Little, Tina McGeorge; S. A. Medd; Professor Ian Richmond; Peter Scott; John Tait; Tim Tatton-Brown; (Major General) Scott-Elliot; Humphrey Welfare; Fran West (with several others now unidentifiable from initials or first name references).

The Fazzān Project (FP)

The FP was initiated at the behest of the Department of Antiquities as a joint venture with the Society for Libyan Studies in 1996, following a visit to Tripoli and Fazzān by Professor Barker with David Mattingly and John Dore. It was a flagship project of the Society for Libyan Studies in the late 1990s and its success owes much to the officers and council who guided and advised. The external advisors of the Society's Fieldwork Committee (Professor Mike Fulford and Dr Tim Potter – the latter replaced after his tragic death in 2000 by Professor Roger Wilson) also kindly agreed to serve on the steering committee managing the Leverhulme project on the Daniels archive. Much of the work of the FP was carried out during the period that David Mattingly served as Chairman of the Society for Libyan Studies (1996-2001), but particular thanks are due to his two predecessors, Dr Susan Walker and Professor Graeme Barker, to his successor, Paul Bennett, and to the Society's Head of Mission John Dore, who have been instrumental in the setting up and following up the project. In addition, special mention is due to the three most recent Society Presidents, Stephen Egerton, Oliver Miles and Claudio Vita Finzi, along with our indispensable General Secretary Shirley Strong MBE and our Honorary Treasurer, Tim Taylor FSA, who uncomplainingly shouldered the extra work that this large project brought their way.

Field seasons took place as follows: January 1997; February to March 1998; January to February 1999; January to early March 2000; January to early March 2001; with a Study Season in January 2002. A further field visit by the project geographers and rock art specialist took place in April 2002, but the results of that are only partially incorporated here. A separate project was organised in October to November 2000 by David Mattingly and John Dore on behalf of the Department of Antiquities and LASMO oil company to survey the course of a pipeline to the west and south-west of Jarma. This work has not been formally incorporated with that of CMD or the FP in this synthesis, though our views on the archaeology of the Massak and of the plain west of Ubārī have been informed by its results.

Financial support for the work of the FP was provided by the following bodies: for archaeological fieldwork (Society for Libyan Studies 1997-2001, through its block grant from the British Academy; the Universities of Leicester and Newcastle upon Tyne), for geographical fieldwork (Society for Libyan Studies; Universities of Leicester and Reading), for Post-excavation work (Leverhulme Trust separate institutional grants relating to work of Daniels and for remote sensing work; British Academy Research Readership 1999-2001 for David Mattingly; Society for Libyan Studies for 2002 finds study work in Libya and for scientific dating (AMS and Uranium Thorium); AHRB/AHRC for initial Palaeobotanical study and a larger grant towards the final write up of the Jarma excavations; NERC for Palaeobotanical study and AMS dates, LASMO GML for AMS dates). LASMO GML also made donations in kind to the project, supplying a computer and printer and providing assistance with vehicles at various points. Shell sponsored the first volume in the Archaeology of Fazzān series, OXY Libya, LLC this second volume.

In Libya, many colleagues in the Department of Antiquities worked in support of the FP. We wish to thank the following in particular from the Tripoli office: Dr Giuma Anag, President of the Department of Antiquities, Ali Emhemmed al-Khadouri, his predecessor in that post, together with Mohammed Shakshuki, Mohammed Turjiman, Giuma Garsa, Abdullah Mahmoudi, Ibrahim Azabi and other colleagues in Tripoli. Acknowledgement is also due to Mabruk Zenati and Shitewe Muhammed and their staff, who kindly accommodated us at Sabratha and Lepcis Magna respectively on several occasions in transit to or from the south. Successive Controllers of the Department's office in Fazzān, Mohammed al-Mashai, al-Mahdi Mohammed al-Azrak and Dr Ali Abdusalem, gave material and intellectual support to the project, as did Mohammed Arreda and Abdulkhader Sherif also of the Sabhā office. At Jarma, the Department's main representative, Saad Saleh Abdelaziz, was indispensable to the well-being of the team and the smooth running of the project, along with other staff based at Jarma, el-Arabi Abdullah Ahmed.

Our Libyan colleagues in the field were as follows: Mohammed al-Mashai (Libyan co-director, Islamic specialist, expert in archaeology of Fazzān) 1997-2000; Abdulkader S. Abdelgader (archaeologist) 1997; Hamza Aburgheba (archaeologist) 1997-1998; Salem Ben-Hamel (conservator) 2000; Youssef Ben Nasif (archaeologist) 1997; Mohammed Ghanoun (archaeologist) 1997; Saad Saleh Abdelaziz (Representative of the Department in Jarma) 1997-2002. Much is owed also to our cooks, to other museum staff and night watchmen and to the many workmen who worked with us.

From 2001, we benefited from the reinstatement of a British Embassy and the British Council to Tripoli. Richard Dalton, the Ambassador, and his wife Elizabeth took a deep interest in the project and facilitated our work in many ways, not least throwing open their Residence for several public lectures. His immediate successor Anthony Layden and his wife Josephine have also been strong allies to visiting archaeologists. We also acknowledge the help we received from other Embassy and British Interests Section staff, notably Dr Noel Guckian, Neil Hammond and Bridget Brind. Successive Directors of the British Council, Tony Jones and Carl Reuter, have also been strong supporters of our work, along with Salah Subhi and other members of the staff there. We also wish to acknowledge the help and material support of numerous staff at the LASMO Grand Maghreb oil company office in Tripoli: notably its then manager Mike Buck and Field Officer Mike Keane. We also enjoyed on numerous occasions the support, comradeship and advice of the Italian mission working in the Akākūs and Tanzzūft, notably Professors Mauro Cremaschi, Mario Liverani and Savino Di Lernia.

The personnel of the FP were as follows (with indication of years in which they participated in fieldwork and specialist roles): Professor David Mattingly (Director of the Fazzān Project 1997-2002 and Chairman, Society for Libyan Studies 1996-2001); Philip Balcombe (field survey specialist) 1997-2001; Dr Tertia Barnett (archaeologist and rock-art specialist) 2000, 2002; Mathilda Britten (archaeozoologist) 2002; Dr Nicholas Brooks (Leverhulme Research Fellow, Remote Sensing studies) 2000-2001; Simon Chapman (human osteologist) 1997; Hugh Coddington (archaeologist/surveyor) 1997, 1998; Franca Cole (conservator, small finds specialist) 1999-2002; Jim Davison (surveyor) 1997; John Dore (ceramic specialist and Head of Mission, Society for Libyan Studies) 2000-2002; Dr Nick Drake (physical geographer, arid zone specialist) 1999-2001; John Duncan (surveyor, soil micromorphology) 1999; Edward Eastaugh (surveyor) 1998; Dr David Edwards (Leverhulme Research Fellow, Daniels' site gazetteer) 2000 ; Dr Mark Gillings (field survey specialist) 1998; Malcolm Gould (surveyor) 2000; Dr John Hawthorne (Leverhulme Research Fellow – Daniels' excavations and ceramic specialist) 2000; Sophie Hay (archaeologist/surveyor) 1999, 2001; Richard Helm (archaeologist/supervisor) 2000; Dr Birgitta Hoffmann (glass specialist) 2002; David Hopkins (illustrator) 2002; Jason Jeffrey (archaeologist) 2000; Tracey Jenkins (archaeologist) 2000; Elanor Johnson (ceramic specialist) 1999; David Kenyon (surveyor) 1997; Dr Stephanie Knight (archaeozoologist) 1999; Dr Anna Leone (ceramic specialist) 1998, 2000-2002; Dr Sue McLaren (physical geographer, desert landforms specialist) 1998-2001; Dr Paul Newson (archaeologist) 2001; Jon Orchard (archaeologist) 2000-2001; Peter Owen (surveyor) 1998; Holly Parton (finds specialist/stone artefacts) 2001-2002; Ruth Pelling (archaeobotanist) 1998-2001; Simon Pressey (illustrator) 1999; James Preston (surveyor, standing buildings specialist) 1999-2001; Dr Tim Reynolds (lithics specialist) 1998-2001; Toby Savage (photographer) 1998-2002; Dr Irene Schrüfer-Kolb (archaeometallurgical specialist) 1999, 2001; Dr Lea Stirling (archaeologist/supervisor) 1998; Matthew Sutherland (archaeologist) 2000; David Thomas (excavation assistant director) 1998-1999, 2001-2002; Adrian Tindall (archaeologist/supervisor) 1998, 2001; Dr Andrew Townsend (archaeologist/supervisor) 2000-2002; Derek Watson (archaeozoologist) 1998; Dr Kevin White (physical geographer, remote sensing specialist) 1998-2002; Dr Andrew Wilson (ancient hydraulic specialist) 1997-2000; Dr Robert Witcher (field survey specialist) 1997. It has not been prcaticable to attribute site plans and photographs to them individually – but the illustrations and site records on which the gazetteer is based says much about the quality of their work.

In leading this project I have been greatly assisted by all my colleagues in the School of Archaeology and Ancient History at the University of Leicester, and especially successive heads of department, Graeme Barker, Marilyn Palmer and Colin Haselgrove, who have helped me to timetable my teaching and administrative responsibilities around the need to be in the Sahara for a month or more in the middle of winter. The same goes for my family – Jenny, Rebecca, Susanna and Douglas – who suffered my absences without complaint and always provided encouragement and support.

Illustrators involved in producing final figures used in the various publications on the project include John Dore, David Edwards, Lucy Farr, Mike Hawkes, Cain Hegarty, Birgitta Hoffmann, David Hopkins, David Mattingly, Deborah Miles-Williams, Paul Newson, Peter Owen, Simon Pressey, Jamie Preston, Ian Reeds, Rosie Wheeler. The majority of the original pottery drawings were the work of Miriam Daniels, with preparation of mounted up pages carried out by John Dore. Photographs in the report have been selected fairly equally across the two phases of work. Many of the early photographs were doubtless taken by CMD himself; a good number of the FP images were the work of the project photographer Toby Savage, with other significant contributions from Tertia Barnett, David Edwards, David Mattingly and Andrew Wilson. I am particularly grateful to Rebecca Mattingly who undertook with great professionalism and patience the scanning of the majority of the 100s of illustrations used in this book.

A further debt is owed to Professors Mike Fulford and Bruce Hitchner who acted as external readers of the finished text of this book. Remaining errors are, of course, the responsibility of the editor and individual authors. Primavera Quantrill carried out the final work of copy-editing and typesetting this book, and, as ever, has done this with technical efficiency and flair. Finally, we are very grateful to Mustapha Turjman of the Department of Antiquities for translating the Arabic abstract with his customary care.

David Mattingly Leicester, September 2006

Part 1. The Archaeology of Fazzān: Site Gazetteer

By D. J. Mattingly and D. N. Edwards
(with contributions from P. Balcombe, T. Barnett, C. M. Daniels, J. N. Dore, J. Hawthorne, A. Leone, P. Newson, T. Reynolds and A. Wilson)

SECTION 0. INTRODUCTION

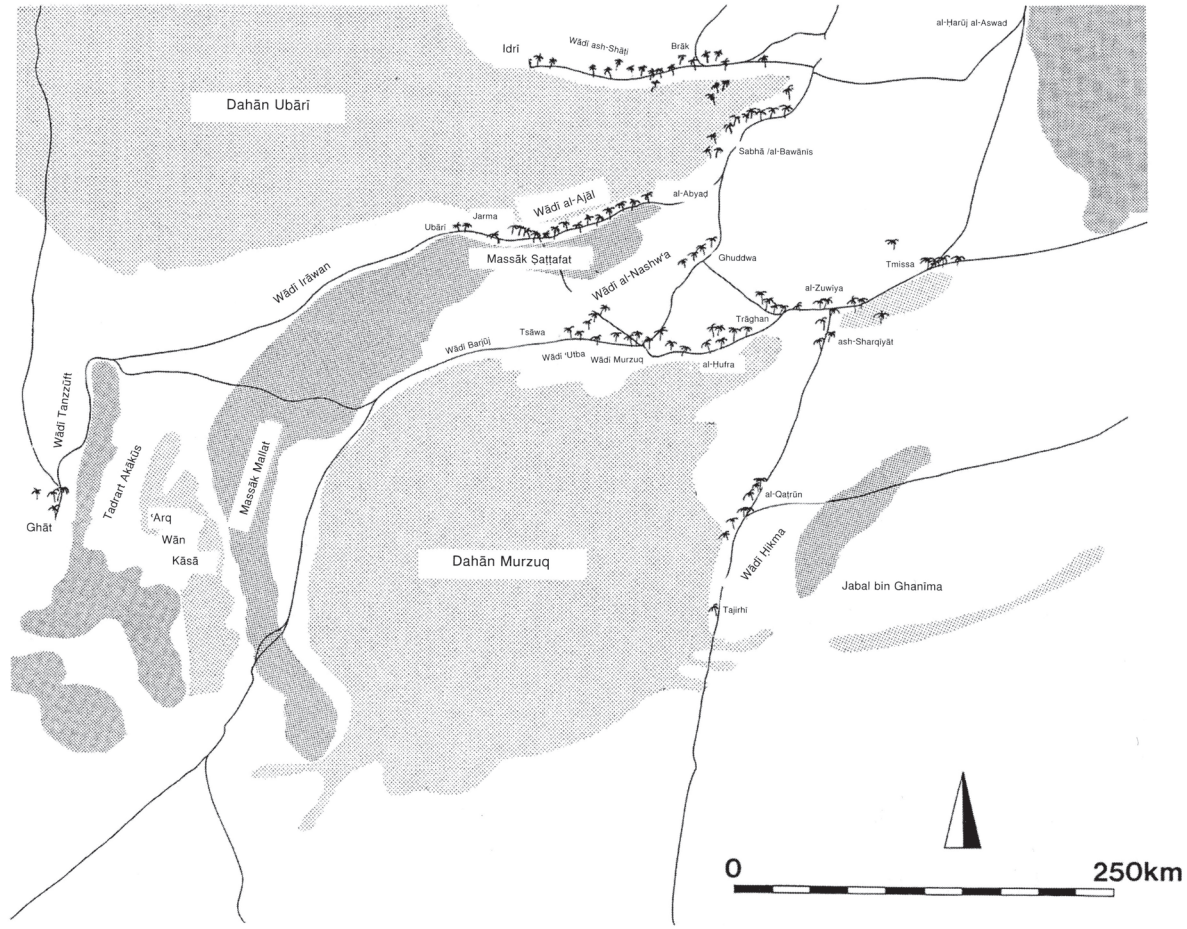


Figure 0.1. General map of Fazzān.

Charles Daniels first visited Fazzān in 1958 launching his larger scale research project in 1965 and completing seven seasons of fieldwork before it came to a close in 1977 (Daniels 1968; 1969; 1970a/b, 1971a/b; 1973; 1975; 1977; 1989). Despite some remarkable initial results achieved in the 1930s by an Italian mission (Pace *et al.* 1951; cf. Camps 1955) and the wide-ranging but rather unscientific excavations of Mohammed Ayoub (Ayoub 1962; 1967a; 1968a-c), CMD's work marked a huge leap forward in archaeological knowledge of the region. As well as excavating near Jarma, he carried out mapping and surface survey of sites, building a large dossier of data, now substantially augmented through the work of the Fazzān Project 1997-2001 (Mattingly *et al.* 1997; 1998a/b; 1999; 2000a/b; 2001). It is striking how much our understanding of the Garamantes has changed in the last 10 years as a result of the renewal of fieldwork (Mattingly 1995; 2000b rested heavily on CMD's published results; cf. now the synthesis presented in Mattingly 2006). This Gazetteer presents the combined results of both projects (Edwards *et al.* 1999; *AF* 1, 16-36).

Daniels introduced a systematic approach to recording sites in Fazzān, based on three-letter codes (derived from place-names) and numerals. Thus GER 001 is Old Jarma town and GER 002 is Sāniat Jibrīl. This system has been adopted and expanded in the work of the FP. In total, there are 29 separate sub-zones of the Wādī al-Ajāl (also referred to as Wādī al-Ḥayāt) and 10 additional areas linked to exploratory work elsewhere in Fazzān (Figs 0.1-0.2). Throughout these reports sites will be referred to by their unique site codes (Fig. 0.3).

The conception of the Gazetteer owes something to the earlier UNESCO Libyan Valleys survey (Barker *et al.* 1996b) and it is hoped that the work will stand comparison with that earlier landmark desert survey (Barker 2006; Mattingly 2000; 2001; 2004a/b; 2005; Mattingly and Barker 2005), as well as being of service to other researchers into Saharan archaeology (whose influential contributions are acknowledged here: for *inter alia*, Cremaschi and di Lernia 1998a; di Lernia and Manzi 2002; Lenssen-Erz *et al.* 2002; Liverani 2006).

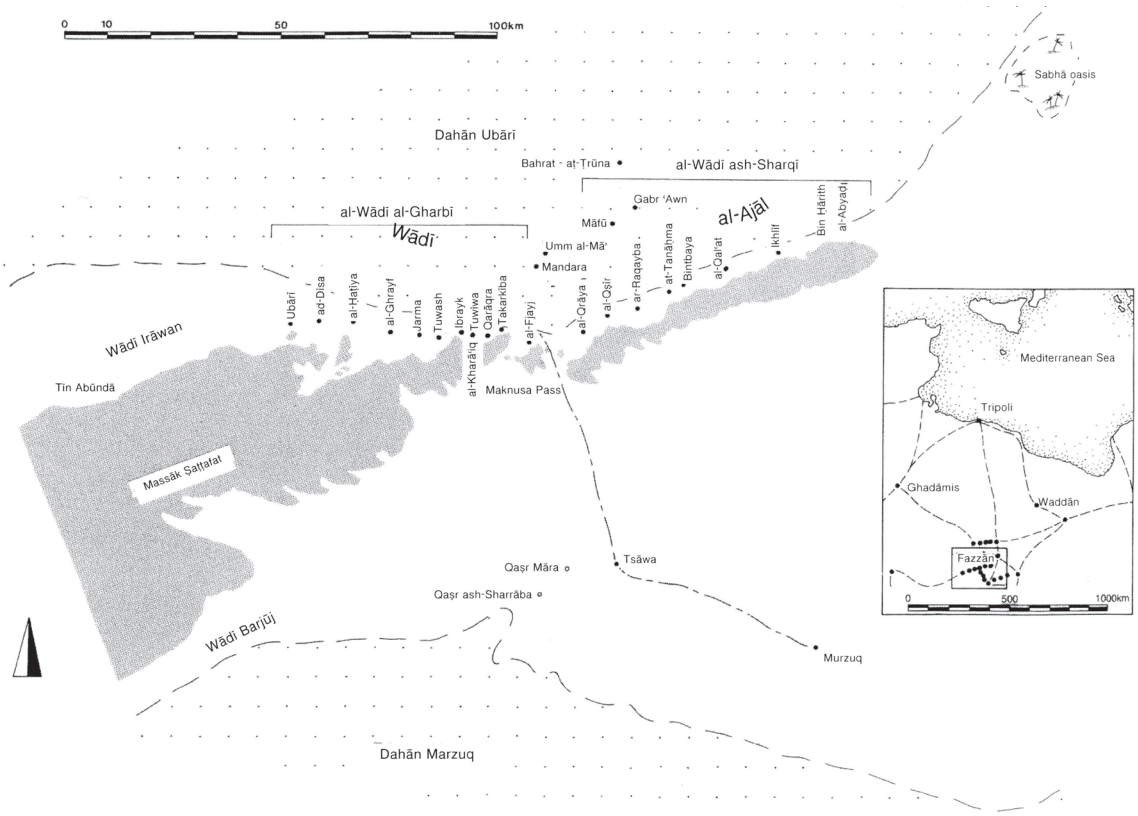


Figure 0.2. Map of the Wādī al-Ajāl and neighbouring areas, showing principal toponyms.

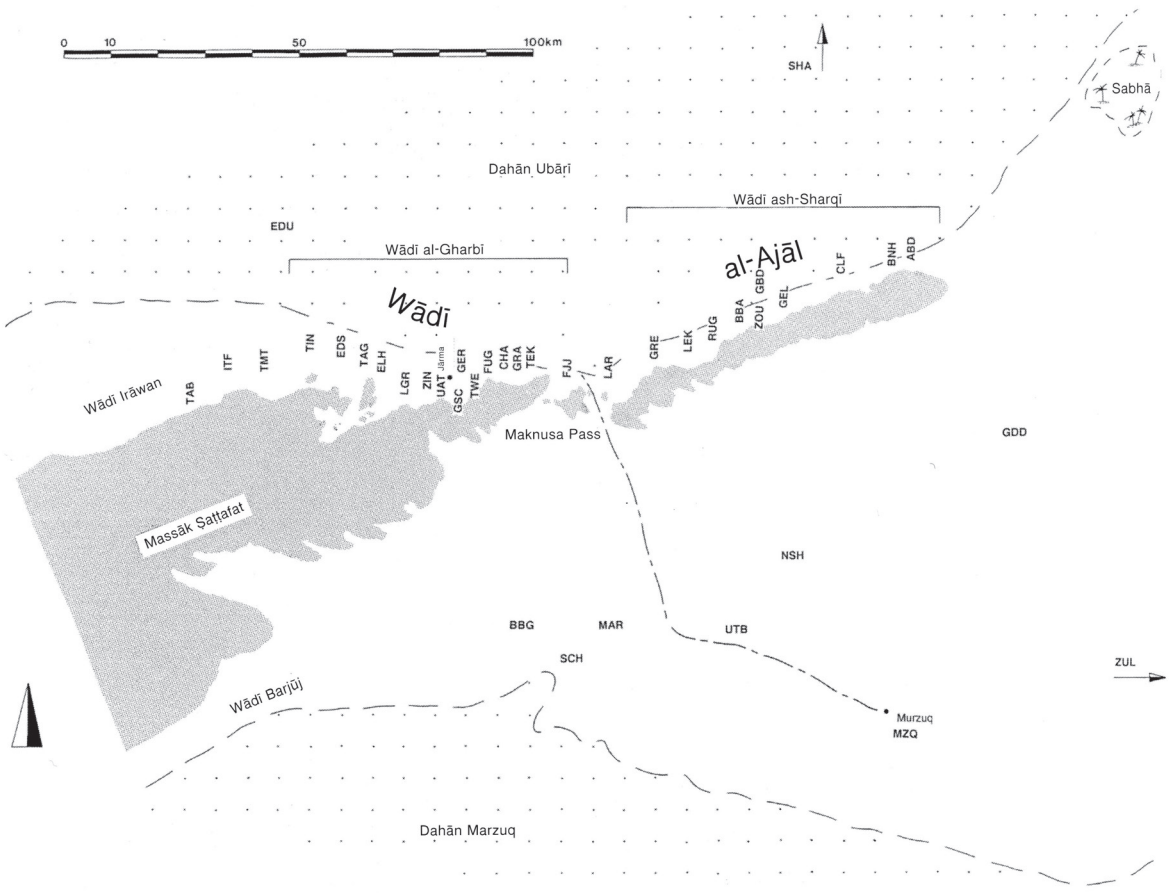


Figure 0.3. Map of the Wādī al-Ajāl and neighbouring areas, showing 3-letter area codes (corresponding to sections 1-39).

Site locations and mapping

The original mapping of sites in the Wādī al-Ajāl, prepared by the Department of Surveying, University of Newcastle was based on plots of air-photographs taken in two phases (1958 and 1968). Digitised versions of these maps made at Leicester in 2000 provide the basis for the area maps within the Wādī al Ajāl used here. Unfortunately, these were not fully geo-referenced and could not, within the scope of the publication project, be used as a basis for a complete GIS-based approach to the data.

Nonetheless, the integration of sites from the CMD archive material with data recorded in recent years, which has benefited from the availability of GPS technology, has presented few major problems. A number of sites identified by CMD were relocated and their positions recorded with GPS (positions are given as degrees+decimal minutes). The Garmin GPS 12 handheld units employed and the U.S. imposed 'selective availability' that remained in force throughout the period when most of the FP fieldwork was carried out, limit the accuracy of many of these readings. In consequence, *all* coordinates in the Gazetteer should be treated as approximate. It was not possible to locate and rerecord all the CMD sites; for the other sites approximate locations have been given, based on geo-referenced satellite imagery. While such positions are reasonably accurate, some small errors are likely, especially towards the E end of the Wādī where few Ground Control Points were available. These are likely to be markedly less accurate than directly recorded sites. In areas of doubt, the site maps, based on CMD's original maps of the Wādī, may provide the most effective means of relocating individual sites on the escarpment edge and these have proved very adequate for navigation purposes.

For larger 'sites' and linear features, notably foggara systems, the positions recorded are not necessarily central, but we have selected positions in which features may be better preserved or otherwise more highly visible, avoiding, for example, areas now known to lie under irrigated agriculture. This may assist relocation of these features.

Site definition

There are over 900 sites in this Gazetteer, but the real total of archaeological features in the area is undoubtedly much higher. We have aimed for a baseline study here, drawing together the current knowledge of the archaeology, and are all too aware of the lacunae and the big questions that remain to be answered. There are a number of limitations in the data that need to be understood at the outset. Although CMD made the Garamantes the clear focus of his research, the FP was more diachronic in scope and we have tried to develop coverage of the prehistoric and Islamic phases (especially the latter given the parlous state of current knowledge and understanding, Insoll 2006).

Regional coverage is very uneven, with the greatest amount of information from the Jarma area where fieldwork has been most intensive. Wherever more detailed research has been carried out on the ground, far larger numbers of archaeological 'sites' have been found. This Gazetteer thus reflects the state of knowledge more than the realities of ancient settlement. It should in no way be taken, on its own, as a basis for estimating the likely impact of modern development within a given region. Some of the sectors with the smallest numbers of sites listed have simply not been explored adequately at present for their full archaeological potential to be assessed. For instance, the Wādī ash-Shāṭī in northern Fazzān is a major oasis belt with little recorded archaeology. Detailed fieldwork there will almost certainly reveal similar densities of sites to those observed in the Wādī al-Ajāl.

Attempts to provide a relatively systematic approach to the definition and recording of 'sites' was much constrained by basic differences between the CMD work and the Fazzān Project. The original data in the CMD archive was itself the product of many years work during which the early, rather *ad hoc* recording system was considerably refined and improved. It was felt desirable to maintain as much as possible of CMD's original site designations to facilitate future work on the archive and finds. However, the level of detail on individual sites varies greatly – from simple one-line references to features visible on the air-photos but never located in the field, to cemeteries of over 100 burials where individual notes are available on each component. Our decision was to include as much information as was available on each site, even though the unevenness of the records will hinder inter-site comparisons. The more detailed case-studies will provide future researchers with 'type-sites' against which to measure their discoveries.

Due to the nature of the archive, some compromises have had to be made and it should be noted that two main classes of 'sites' appear in the Gazetteer, discrete and well-defined site units (e.g. nucleated cemeteries, fortified settlements or *qsur*), and more amorphous spreads of material, such as elements of the ubiquitous cairnfields along the escarpment edge. This second group tend to reflect blocks of landscape on which archaeological features (e.g. spread of cairns) were encountered. Even where formal boundaries of particular funerary areas were unclear to us, we have tended to define such features as 'cemeteries' rather than use the vaguer 'graves' or 'cairns' (though some individual, isolated cairns and graves are so noted). The extent of 'cemeteries' was thus often defined by convenient landscape markers (e.g. a length of escarpment between two promontories). They thus serve as a guide to where archaeological features may be found but *cannot* be used as analytical units; they are not necessarily discrete 'sites'. In some cases, where it has been possible to further examine the cairnfield 'sites' recorded by CMD it is clear that some may comprise several distinct areas, probably discrete cemeteries, sometimes of different

periods. Certainly, much more detailed recording of many sites is desirable in the future.

The potentially arbitrary nature of some of the 'sites' also applies with regard to the recording of the rock art and foggara. CMD recorded relatively little rock art in detail, although he noted the location of several significant groups, which have subsequently been further investigated. Further reconnaissance in 2000 identified several major groups, which are listed in the Gazetteer and undertook some detailed recording of a sample (Tertia Barnett has continued this work in subsequent years, see Barnett 2001, 2002; 2003; 2005; 2006; Barnett and Roberts 2003). The identification of individual rock art 'sites' is problematic and these may include both extensive spreads and more discrete clusters of engravings or single isolated images. In principle, every individual image could represent a separate site component or a separate 'event', and well over 1000 images are now known within the Wādī al-Ajāl (Barnett 2005, 127). As such, it is important to recognise that many of our site units define convenient groups for recording purposes. The extent to which clusters of 'sites', often around landscape features (e.g. the major escarpment headlands), may actually need to be analysed as single site complexes remains an area worthy of further exploration.

The foggara systems have been recorded by a combination of mapping and photo-interpretation from the AP coverage (by David Edwards) and by selective field investigation (coordinated by Andrew Wilson). The former process tended to divide the foggara into local clusters. In the absence of any additional evidence relating to their dating or use-history, such clusters can only be used for locational purposes and again they cannot be used as analytical units. The more detailed studies – sometimes recording within defined foggara groups, but occasionally focused on individual foggara channels – have demonstrated the potential degree of variance in construction and date within the groups, as the irrigation systems were augmented and adapted over time. Contiguous foggara channels need not necessarily be contemporaneous, but could reflect the investment of separate generations in irrigation works. Since each foggara represents a major work of engineering it could be argued that every one merits individual site numbers. In practice, to have done so would have added another 500 'sites' to this Gazetteer!

This accords with a basic principle of this compilation, whereby sites/locale/objects should not have more than one gazetteer entry. Thus individual features of a foggara system do not normally have a separate site entry – their first order ID is as part of a 'foggara group' (e.g. TWE 009). Following that they have further identification levels (e.g. foggara channel F39, well shaft 157) but this is not a primary gazetteer entry for a 'site'. In more detailed studies, the researcher should use the primary ID and then build their own ID groups around this. There remain a few instances where parts of what were eventually recognised to be part of a single site were initially recorded under separate numbers. Cross-reference between the component parts should be clear and generally one number will be flagged as the main reference.

Site designations

Antenna Tomb: a distinctive form of late Pastoral burial (di Lernia and Manzi 2002, 84-95 for two excavated examples in Wādī Tanzzūft dating to later 2nd millennium BC). Sometimes known as V-burials this is a well-recognised Saharan type (Reygasse 1950, 56-62). The most commonly attested form consists of a central cairn burial, with two radiating 'antennae' demarcated by lines of stones pointing approximately NE and SE *(AF* 1, 201-3).

Cairn, cairns: the commonest form of Saharan burial is the cairn – a structure of piled stone over the body *(AF* 1, 187-89, 196-98). In some areas it is clear that cairns were raised for other purposes, for instance, as navigation markers. Single or pairs of cairns have been recorded under this heading, but groups of cairns have been recorded under the broad category of cemetery.

Cave: the term relates to both caves and rock shelters.

Cemetery: as a general term in this Gazetteer this has been applied to any group of burials or suspected burials, whether highly nucleated or quite dispersed (see *AF* 1, 187-234 for detailed classificatory scheme; note also el-Rashedy 1988; di Lernia and Manzi 2002, 25-37 offer a complementary overview on a rather different archaeological complex about 350km to the W). The layout of cemeteries tends to follow one of the following Morphological Types (Fig. 0.4):

Type 1. **Dispersed simple cairns** running up the escarpment. Mainly Late Pastoral and Early Garamantian

Type 2. **Dispersed cemeteries with some clustering** of burials, and some drum cairns, proto-stele and stone bowls/proto-tables. Mainly Proto-urban Garamantian

Type 3. **Nucleated escarpment cemeteries** (encompass a range of tomb-types, from simple shaft burials (type 2) to drum cairns/tombs (type 3), square and rectangular forms (type 4) and stepped tombs (type 5) along with evolved stele and offering-tables. Mainly Classic Garamantian

Type 4. **Nucleated cemeteries entirely of non-monumental burial types** (especially shaft burials of type 2). Mainly Classic Garamantian

Type 5. **Nucleated cemeteries of large cairns and drum tombs**. Mainly Proto-urban and Classic Garamantian

Type 6. **Linear cemeteries**. Mainly Classic or Late Garamantian

Type 7. **Nucleated oasis-centre cemeteries** with linear alignments. Mainly Classic Garamantian

Type 8. **Nucleated oasis-centre cemeteries** with dense infilling. Mainly Classic or Late Garamantian

Some of the funerary landscapes designated cemetery sites by CMD clearly contain a mixture of different cemetery Types, perhaps representing distinct phases of activity. Further study on

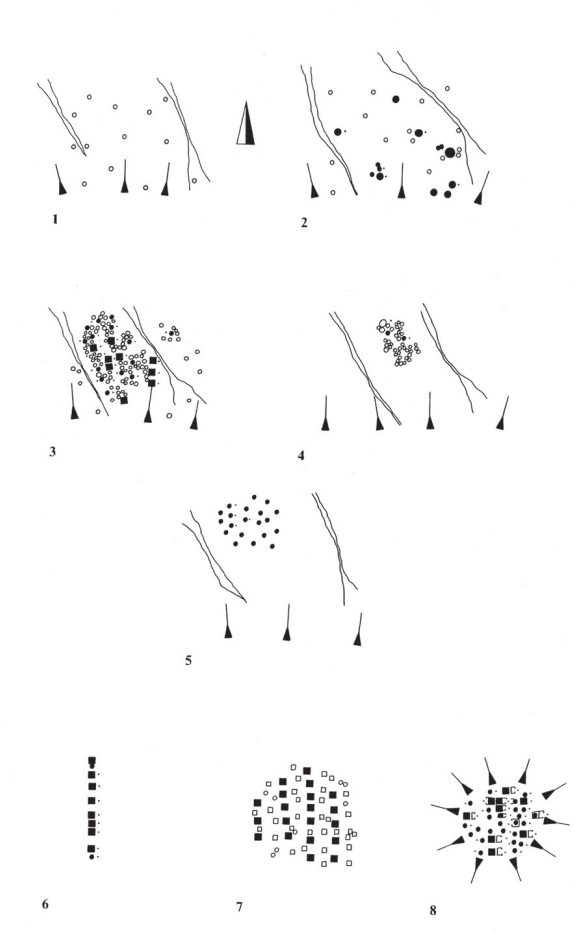


Figure 0.4. Morphology of funerary areas (Cemetery Types).

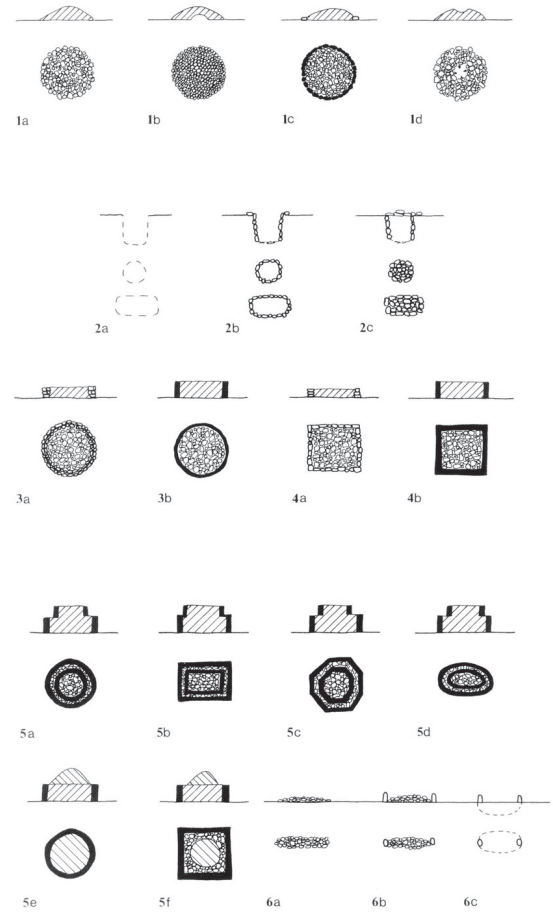


Figure 0.5. Typology of simple funerary monuments within cemeteries (tomb types).

the ground will be needed to differentiate between these different phases of activity within a long-lived funerary landscape.

On the basis of our study of the CMD and FP dossier, the following broad typology has been proposed for simpler funerary monuments (Fig. 0.5; cf. *AF* 1, 196-200 for fuller explanation):

type 1 Simple Cairns
type 1a. The **mound cairn**
type 1b. The **corbelled cairn**
type 1c. The **kerbed cairn**
type 1d. The **crater cairn**
type 2 Shaft Burials
type 2a. The simple **circular or oval shaft**
type 2b. Shaft marked by **stone ring**
type 2c. The **capped shaft**
type 3 Drum cairns and drum tombs
type 3a. The **drum cairn**
type 3b. The **drum tomb**
type 4 Square or rectangular built cairns or tombs
type 4a. The **quadrangular built cairn**
type 4b. The **quadrangular tomb**
type 5 Stepped tombs
type 5a. The **circular stepped tomb**
type 5b. The **quadrangular stepped tomb**
type 5c. The **multangular tomb**
type 5d. The **oval stepped tomb**
type 5e. The **conical stepped tomb**
type 6 Simple graves
type 6a. A simple cigar-shaped **grave mound**
type 6b. The **grave mound with head/footstone**
type 6c. The **grave marked by stones**

Cemeteries containing a distinctive form of pyramidical funerary monument, often alongside other burial types have been highlighted in the Gazetteer by the terms 'cemetery (pyramid)' (on this type, see *AF* 1, 192-96). A number of other monuments have also been recorded separately – notably 'mausolea', antenna tombs and marabout tombs. A characteristic of the funerary archaeology in Fazzān is the heterogeneity of funerary monuments encountered in many cemeteries. For the Garamantian period, although certain types of burial and accompanying features such as offering tables and stele, can be dated in broad terms, the degree of variation of monument types in contemporary use (even in the same cemetery) is striking, and regional traits are evident in the data.

Since by no means all cemeteries had been surveyed on the ground, it has proved premature (indeed

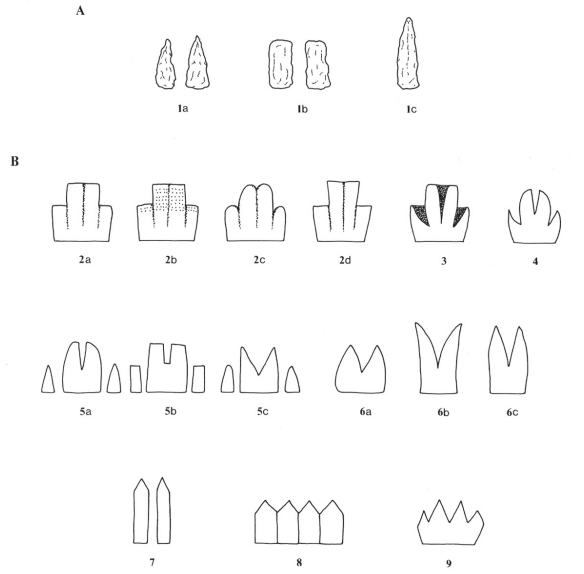


Figure 0.6. Typology of stele.

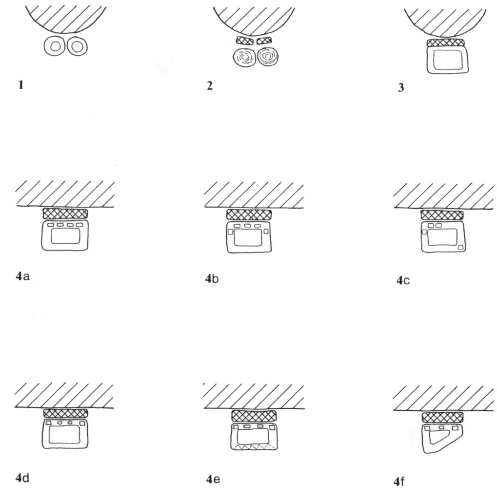


Figure 0.7. Typology of offering tables.

impractical) to try to categorise all our cemeteries and their constituent monuments into these definitive Types and sub-types, though the typologies now exists for this to be attempted in future work. Where the CMD descriptions and photographs allow greater certainty, or where FP revisited sites, we have endeavoured to employ the new classification to cemetery type, tomb types, stele and offering table types (Figs 0.4-0.7). Even for these sites, the record must be considered a provisional and likely incomplete.

Enclosed settlement: A few minor settlements were provided with perimeter walls, which need not have been defensive. Quite a few *qsur* were at the core of sites enclosed within a coherent larger perimeter work. Many of the early modern villages were enclosed settlements, with either an outer perimeter wall, or with the outer buildings in the settlement arranged to provide a near continuous wall broken only by a few gates (Scarin 1934). However, it is clear from Garamantian examples of this sort of arrangement that this form of settlement has a long history in Fazzān (*AF* 1, 155-59).

Enclosure: Some sites comprise large enclosures, with and without internal buildings. Single and multiple enclosures can also occur in association with *qsur*, though where these seem to form a single coherent outer perimeter they have generally been recorded as enclosed settlements.

Escarpment settlement: early Garamantian settlements were often on spurs of the Massāk Ṣaṭṭafat or on sloping ground on the edge of the Massāk escarpment. Zinkekrā (ZIN 001-003) is the type site (Daniels 1968), but numerous other examples are now known (*AF* 1, 136-42)

Field System: Modern farming has obscured most traces of ancient gardens and field systems, though in a few locations there are important elements visible (*AF* 1, 254-56).

Foggara: Underground water channel and associated series of vertical shafts excavated during construction of the channel. An individual foggara consisted of a mother well dug into the water table at the foot of the escarpment (can be over 40m deep) and a series of up to several hundred further shafts of gradually decreasing depth, linked at the base by a channel of 1-3km length, which eventually leads flowing water to fields set in the lowest-lying part of the valley *(AF* 1, 235-63 for detailed account and 242-46 for maps showing overall distribution in al-Ajāl; see also Mattingly and Wilson 2003; Wilson 2006).

Foggara Group: For convenience, most foggaras have been recorded as local clusters of foggaras, though it should not be presumed that all closely adjacent examples are contemporary.

Funerary monument: Used to designate unusual (and often isolated) examples of funerary structures, recorded separately from neighbouring cemeteries. Can be any period, provided that of significant scale (antenna tombs, mausolea and marabout tombs are also 'funerary monuments' but are recorded separately).

Grave: Some individual and isolated funerary features have been recorded as 'grave'.

Hearth: Small piles of burnt stones are believed to be the hearths of long-vanished prehistoric campsites. Not common in the Wādī, but more frequently observed in marginal zones such as the Wādī Irāwan or Wādī Tanzzūft (Cremaschi and di Lernia 1998b; Gabriel 2002, for similar 'fireplaces').

Industrial site: Site with evidence of intensive manufacturing activity, but lacking clear evidence of normal settlement features. These sites are associated with metallurgical and non-metallurgical slags, the latter perhaps connected to salt production (Schrüfer-Kolb, Section 43, below).

Inscription (Libyan/Tifinagh/Arabic): Inscriptions of varying date and in various languages, sometimes cut on portable artefacts (grave stele), at others on the living rock *(AF* 1, 317-24). The Libyan texts span the ancient language of the Garamantes to the Tifinagh script of the Tuareg (some potentially of recent date, but overall spanning many centuries).

Lithic artefact/artefacts: One or two stone tools found in isolation from more general lithics scatter or débitage.

Lithics scatter: Points in the landscape where distinct concentrations of lithics (stone tools, cores, débitage, etc.) were noted. For general accounts of lithic technology in this part of the Sahara, see Section 42, this volume; *AF* 1, 323-31; Reynolds 2006).

Marabout tomb: *murābitūn* or 'marabout' monuments are the venerated burial places of Islamic holy men. These structures are often whitewashed and decorated with offerings *(AF* 1, 179-80).

Mausoleum: there a few examples of monumental funerary structures that are architecturally linked with the mausolea of the Mediterranean cultures *(AF* 1, 189-92). It is not certain that the Fazzān examples were used for burial, though they occur in cemeteries. In the absence of certain burials below these monuments it is possible that they served as funerary temples of some sort.

Mosque: this category encompasses both permanent mosques in settlements *(AF* 1, 181-85) and vestigial outlines used as places of worship on the desert tracks *(AF* 1, 185-86).

Occupation?: Such sites include those with amorphous scatters of artefacts (e.g. sherds, grindstones) but lacking visible structural remains. These are primarily prehistoric habitation sites of the Pastoral phase *(AF* 1, 128-31).

Other structure: a catch-all term for miscellaneous stone structures of uncertain type – they may relate to funerary features or to settlements.

Pottery scatter: Many pottery scatters indicate human habitation and may contribute to the interpretative categories of 'occupation?' or 'settlement?'. Occasionally dense concentrations of pottery sherds have been recorded in isolation from any other features and these are noted here as pottery scatters.

Pyramids: see cemeteries.

Quarry: evidence for past extraction of building stone, wedge marks, cut quarry face etc.

Qasr, Qsur: these are fortified sites, varying in size from simple towers to substantial fortresses (see *AF* 1, 146-54; cf. also Barker *et al.* 1996a, 127-34). The Arabic term simply means 'castle'. Given the wide structural and chronological variance, the group has been left rather broadly defined.

Rock art: This may include a range of pecked, ground or incised designs. Paintings do not survive in the area, though it is likely that some painted rock art was also produced – in much the same way that the Akākūs produces engravings as well as painted works (for the definition of a series of predominant styles and themes see *AF* 1, 279-317). The main styles can be briefly summarised:

Naturalistic Bubaline (c.7000?-4500 BP)

The phase is often termed the *Bubalus antiquus* or Great Wild Animal phase as it is characterised by naturalistic depictions of the African buffalo, *Bubalus antiquus*, and a rich menagerie of fauna including elephant, giraffe, hippopotamus, crocodile, aurochs and antelope. Images in this style are typically large, naturalistic depictions of animals engraved with deeply incised and polished lines, and the engravings often include detail of animals' hides or markings, and sensory organs.

Cattle Phase (c.6000-3000 BP)

Cattle domestication by the 6th millennium BP during the Neolithic Wet Phase is amply reflected in the rock art, but likely continuing after the start of the arid phase as cattle herders adapted to the new conditions.

Tazina Phase (c 5000-2800 BP)

This is a unique style of engraving that developed in only certain Saharan regions and seems to relate to the Late Pastoral phase after the major climatic change of *c.*5000 BP. This Tazina style is characterised by engravings of wild and domesticated animals with a deeply incised, polished outline whose schematic style is typified by the animals' front or back limbs depicted as tapering to a point. Animals such as the antelope, oryx and caprine are common, with many species depicted in the earlier phase now absent, suggesting a shift to a more arid environment. Abstract and non-figurative images are also common to this phase – ovoids and 'spears' in particular.

Horse or Caballine phase (3rd – 2nd millennium BP)

The first appearance of horses, often with riders, characterises this phase in many regions of the Sahara, including Fazzān. Engraved images are depicted in a schematic, geometric style, with human figures sometimes delineated as double triangles with a line or circle for the head. Carts and two or four-wheel chariots are also shown for the first time and are traditionally attributed to the Garamantes. Figures are often depicted brandishing weapons and other implements that may relate to status or social affiliation. This phase essentially overlaps with the Garamantian period.

Camel or Cameline phase (end of 3rd millennium BP to the recent past)

Following on from (and partially overlapping with) the horse phase, the camel phase is characterised by images of camels, many with riders or with packs, which are depicted in schematic, pecked engravings. These are shown alongside representations of domesticated animals (especially caprines) and occasional wild animals that generally form part of a hunting scene. The camel style is often associated with the Tuareg people, whose writing, Tifinagh, is a prolific component of this phase of engravings. Often dismissed as 'modern', it is clear that some at least of the camel phase imagery and inscriptions must also relate to the Garamantian period and its immediate aftermath.

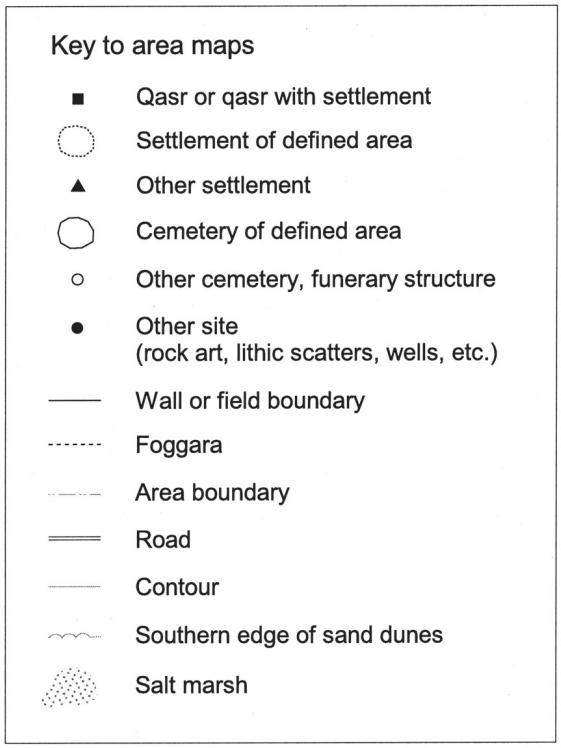


Figure 0.8. Key to site symbols used on main area maps in the Gazetteer.

Settlement: Habitation sites defined by artefactual and architectural traces – most commonly the traces of stone or mudbrick buildings. The term is used for all sizes of site and all vernacular architecture spanning the Garamantian to modern periods *(AF* 1, 117-27, 154-60). Not all early modern/modern villages have been formally numbered as sites in the Gazetteer, though significant historic villages in each sector are noted in the introductory notes to each section, along with an indication of the local population and date palms recorded in the 1930s by the Italians (Scarin 1934; 1937a/b; cf. also French ethnographic and geographical work by Despois 1946; Lethielleux 1948). There are general overview studies of the Fazzānese villages of the early modern period in the Wādī ash-Shāṭī (Despois 1946, 116-18, 223-27; Scarin 1934, 13-63; 1937b, 606-16), Sabhā area (Despois 1946, 221-22; Scarin 1934, 103-10; 1937b, 620-22), Wādī al-Ajāl (Despois 1946, 218-221; Scarin 1934, 64-103, 110-14; 1937b, 616-26), Wādī 'Utba, al-Ḥufra and ash-Sharqiyāt (Despois 1946, 108-12, 213-18; Scarin 1934, 115; 1937b, 626-38), Ghāt (Scarin 1937b, 641-44) and Wadi Wadi Ḥikma (Scarin 1937b, 639-41). See also the separately defined forms – enclosed settlement, 'escarpment settlement', urban settlement'. Pre-Garamantian occupation sites are generally referenced under 'occupation', 'lithic scatters' and 'cave'.

Stone alignments: linear arrangements of stones in the landscape, of uncertain function and significance.

Trapping stone: These are hitherto unattested within the Wādī al-Ajāl, but are present in large numbers on the Massāk Ṣaṭṭafat and in the Wādī Irāwan W of Ubārī *(AF* 1, 338-40).

Urban settlement: Most of the Garamantian, Islamic and modern settlements in the study zone might be characterised as villages *(AF* 1, 155-60). But a small number are of larger scale and/or have characteristics that merit the use of the term 'Urban settlement'.

Wall: In a few locations linear walls have been recorded which appear to have had a defensive or control function *(AF* 1, 136-46). Some of the walls are defensive enceintes around sites (ZIN 900), while others appear to have been built to create points of control at narrow points between escarpment and sand sea along the Wādī al-Ajāl (FUG 16, TEK 008).

Well: Wells are a characteristic feature of a desert farming landscape and changes to the morphology and technology of wells are important markers of hydrological and social change (see *AF* 1, 266-73, for detailed discussion of well technology and typology).

Dating

The dating of many of the sites in the Gazetteer remains approximate at best. However, we have attempted to provide an indication of *likely* date from a range of factors: finds collected, AMS dating where available, historical records, diagnostic architectural, artistic or structural features that link to dated site types. Broad periods attested are as follows (Table 0.1).

The codes in the first column of Table 0.1 are listed as appropriate at the end of each Gazetteer entry. Where periods are printed in bold Roman type, the date is based on artefact analysis or on scientific dating. Where periods are given in ***bold italic*** font the dating rests on structural/typological assumptions. Question marks are used here and there to indicate further degrees of uncertainty. Periods given in square brackets are those that seem to most obviously represent the presence of material far removed from the main phase of activity at the site. A hypothetical entry for a cemetery reading '[PAL], PUGAR, *CGAR*' thus would indicate the presence of artefacts of Palaeolithic and Proto-urban Garamantian date (with the former being seen as unassociated with structural features), but with the site presenting physical characteristics that suggest that use continued into the Classic Garamantian period.

It must be stressed that for many sites the diagnostic pottery sherds or lithic tools represent a small percentage of the total material collected; moreover, no collections have yet been made at many sites. Future research is likely to add significantly to the periods attested, especially where excavation is carried out. It is also to be hoped that the publication of the pottery type-series in this volume will facilitate dating of site finds in future. At the outset of the FP, there was no such research tool available. Fluctuations in 'pottery supply' from outside the area also have important implications for the dating of sites. There

Table 0.1. Dating codes used in the Gazetteer.

Code	Period	Dates BP	Dates BC/AD
PAL	Palaeolithic	400000-70000	400000-68000
PREPAST	Pre-Pastoral (Epipalaeolithic or Mesolithic)	10000-8500	8000-6500
EPAST	Early Pastoral (Neolithic)	7500-6000	5500-4000
MPAST	Mid Pastoral	6000-5000	4000-3000
LPAST	Late Pastoral	5000-3000	3000-1000
PAST	Pastoral (undifferentiated)	7500-3000	5500-1000
EGAR	Early Garamantian	3000-2500	1000-500
PUGAR	Proto-urban Garamantian	2500-2000	500-1 BC
CGAR	Classic Garamantian	2000-1600	AD 1-400
LGAR	Late Garamantian	1600-1300	400-700
GAR	Garamantian (undifferentiated)	3000-1300	1000 BC – AD 700
POSTGAR	Post-Garamantian	1300-900	700-1100
EISLAM	Early Islamic	900-700	1100-1300
ISLAM	Islamic	700-300	1300-1700
EMOD	Early Modern	300-0	1700-1951

are far fewer late Garamantian sites attested than Classic Garamantian ones for instance. It is likely that this is in part at least a factor of reduced imports making the late Garamantian phase harder to identify. Similarly (and even more markedly) post-Garamantian activity at present can only be identified through AMS dating as we lack specific pottery diagnostics of this period. A full list of all the AMS dates obtained by the FP to date is included as Section 40 below (see also Mattingly *et al.* 2002).

A few comments are required regarding the *typological* dating of a number of features:

Cemeteries: some of the cemeteries which lack formal dating evidence in the form of pottery nonetheless share important characteristics with dated sites (for instance in terms of complex tomb types, or in the presence of the developed stele and offering tables of the Classic Garamantian period). In such cases the suggested dating phase is given in italics. Where there is no certainty of date – particularly the case with dispersed cairn fields that have not been examined on the ground – the normal solution has been to list these as *LPAST? GAR?* simply to highlight the most likely periods. Some at least of the escarpment cemeteries ought to date to the post-Garamantian phase, but firm evidence is entirely lacking at present.

Rock art: given the unresolved problems with the dating of the four main phases of rock art commonly identified (big game, bovine, horse, camel) a simple solution has been followed here. Images of big game, bovines and other 'early' imagery are treated as Pastoral *(PAST)* in a broad sense. Images of the 'horse phase' are generally treated as Garamantian *(GAR)*, while 'Libyan' inscriptions and the camel phase imagery is recorded broadly as 'Garamantian – early Modern' *(GAR-EMOD?)* to cover the full potential timespan of such engravings.

Foggaras: following the conclusion of *AF* 1 that these broadly date to the Garamantian period (latter centuries BC to AD 600), these are universally recorded as such (GAR). However, we do not preclude the possibility that some may eventually be more closely dated to, say, the proto-urban Garamantian phase (PUGAR) or that some foggaras might eventually prove to have been constructed (or still in use) in post-Garamantian (POSTGAR) or early Islamic (EISLAM) times. Similarly **wells** are conventionally recorded here as (ISLAM-EMOD?) on the basis that that is the broad period when most are likely to have been constructed and maintained. It does not preclude the possibility that future research will demonstrate earlier origins for some wells.

Qsur: prior to the work of the FP the assumption was that most standing *qsur* (castle- or fort-like buildings) were of Islamic or early modern date. However, the AMS and sherd evidence from a number of sites have cast doubt on this assumption and show that the fortified village was well established as a settlement type in Garamantian times too (see *AF* 1, 149-54). In many cases where traces of *qsur* were noted on the air-photographs, but not followed up by site visits, the broad potential date bracket is offered *GAR-EMOD?* In a limited number of cases, structural peculiarities imply a narrower date range *ISLAM-EMOD.*

The site types can be further grouped under a series of main headings:

Table 0.2. Funerary related sites

Site Code	Site Type	Chronological Periods
BBG 007	Antenna tomb	M-LPAST
BBG 010	Antenna tomb	*LPAST,* PAST
BNH 011	Antenna tomb	*LPAST*
BNH 014	Antenna tomb	*LPAST*
EDU 028	Antenna tomb	MPAST, LPAST
ELH 019	Antenna tomb	*LPAST*
TAB 001	Antenna tomb	*LPAST*
TAB 002	Antenna tomb	*LPAST*
TAB 004	Antenna tomb	*LPAST*
TAB 009	Antenna tomb	*LPAST* [PAL]
TWE 044	Antenna tomb	M-LPAST
EDS 012	Antenna tombs	*LPAST*
BBG 009	Cairn	*LPAST? GAR?*
EDS 012	Cairn	*LPAST*
SCH 024	Cairn	*GAR?*
TAB 003	Cairn	*LPAST? GAR?*
TAB 012	Cairn	*LPAST? GAR?*
TAB 014	Cairn	*LPAST? GAR?*
TIN 023	Cairn	*LPAST? GAR? EMOD?*
ELH 025	Cairns	PAL, *LPAST?*
TAB 019	Cairns	*LPAST?GAR?*
TIN 024	Cairns	*LPAST?*
MZQ 001	Cemeteries	*ISLAM, EMOD*
ABD 002	Cemetery	*LPAST? GAR?*
ABD 004	Cemetery	*LPAST? GAR?*
ABD 005	Cemetery	*LPAST? GAR?*
ABD 006	Cemetery	*LPAST? GAR?*
BBA 001	Cemetery	*PUGAR?*
BBA 002	Cemetery	*LPAST? GAR?*
BBA 003	Cemetery	*LPAST? GAR?*
BBA 006	Cemetery	*LPAST? GAR?*
BBA 007	Cemetery	*LPAST? GAR?*
BBG 001	Cemetery	*LPAST? GAR?*
BBG 002	Cemetery	CGAR
BBG 003	Cemetery	CGAR
BBG 012	Cemetery	*LPAST? GAR?*
BNH 001	Cemetery	*LPAST? GAR?*
Site Code	**Site Type**	**Chronological Periods**
BNH 002	Cemetery	*LPAST? GAR?*
BNH 013	Cemetery	*LPAST? GAR?*
BNH 015	Cemetery	*LPAST? GAR?*
BNH 016	Cemetery	*LPAST? GAR?*
BNH 018	Cemetery	*LPAST? GAR?*
CHA 002	Cemetery	CGAR, *GAR*
CHA 012	Cemetery	*LPAST? GAR?*
CLF 003	Cemetery	CGAR, LGAR
CLF 004	Cemetery	PUGAR
CLF 005	Cemetery	*LPAST? GAR?*
CLF 006	Cemetery	*LPAST? GAR?*
CLF 007	Cemetery	*LPAST? GAR?*
CLF 010	Cemetery	LPAST, EGAR, PUGAR, CGAR
CLF 012	Cemetery	CGAR
CLF 013	Cemetery	*LPAST? GAR?*
CLF 014	Cemetery	*LPAST? GAR?*
CLF 016	Cemetery	*LPAST? GAR?*
CLF 019	Cemetery	*LPAST? GAR?*
CLF 021	Cemetery	*LPAST? GAR?*
CLF 024	Cemetery	*LPAST? GAR?*
CLF 025	Cemetery	CGAR
CLF 027	Cemetery	CGAR
CLF 028	Cemetery	CGAR
DBD 001	Cemetery	*GAR?*
EDS 001	Cemetery	*PUGAR?*
EDS 002	Cemetery	*LPAST? GAR?*
EDS 003	Cemetery	*LPAST? GAR?*
EDS 004	Cemetery	*LPAST? GAR?*
EDS 005	Cemetery	*LPAST? GAR?*
EDS 011	Cemetery	*PUGAR? CGAR?* [GAR-EMOD]
EDU 030	Cemetery	*LPAST?*
ELH 004	Cemetery	PUGAR? CGAR
ELH 016	Cemetery	PUGAR
ELH 017	Cemetery	*LPAST? GAR?*
FJJ 002	Cemetery	PUGAR, CGAR
FJJ 003	Cemetery	PUGAR, CGAR
FJJ 004	Cemetery	PUGAR, CGAR

FJJ 005	Cemetery	PUGAR, CGAR
Site Code	**Site Type**	**Chronological Periods**
FJJ 006	Cemetery	CGAR, LGAR, [ISLAM]
FJJ 007	Cemetery	CGAR
FJJ 009	Cemetery	CGAR
FJJ 010	Cemetery	CGAR
FJJ 011	Cemetery	*ISLAM? EMOD?*
FUG 001	Cemetery	PUGAR, CGAR, ISLAM, EMOD
FUG 002	Cemetery	PUGAR
FUG 003	Cemetery	CGAR, LGAR
FUG 004	Cemetery	CGAR, LGAR
FUG 005	Cemetery	*LPAST? GAR?*
FUG 006	Cemetery	*LPAST? GAR?*
FUG 007	Cemetery	*LPAST? GAR?*
FUG 008	Cemetery	*GAR?*
FUG 009	Cemetery	CGAR
FUG 010	Cemetery	CGAR
FUG 011	Cemetery	*LPAST? GAR?*
FUG 012	Cemetery	*LPAST? GAR?*
FUG 013	Cemetery	*GAR?*
FUG 014	Cemetery	CGAR, [PAST]
FUG 015	Cemetery	*LPAST? GAR?*
GBD 004	Cemetery	CGAR
GDD 001	Cemetery	*CGAR*
GDD 002	Cemetery	*CGAR*
GDD 003	Cemetery	*LPAST? GAR?*
GDD 004	Cemetery	CGAR
GEL 006	Cemetery	*LPAST? GAR?*
GEL 008	Cemetery	*LPAST? GAR?*
GEL 009	Cemetery	*LPAST? GAR?*
GEL 010	Cemetery	*LPAST? GAR?*
GEL 017	Cemetery	*LPAST? GAR?*
GEL 018	Cemetery	*LPAST? GAR?*
GEL 019	Cemetery	*LPAST? GAR?*
GEL 020	Cemetery	*LPAST? GAR?*
GEL 021	Cemetery	*LPAST? GAR?*
GEL 022	Cemetery	*LPAST? GAR?*
GEL 023	Cemetery	*LPAST? GAR?*
GEL 024	Cemetery	*PUGAR?*

GEL 027	Cemetery	CGAR, LGAR
Site Code	**Site Type**	**Chronological Periods**
GEL 028	Cemetery	*LPAST? GAR?*
GEL 030	Cemetery	*LPAST? GAR?*
GEL 031	Cemetery	ISLAM
GER 007	Cemetery	ISLAM, EMOD
GER 011	Cemetery	PUGAR, CGAR, LGAR [EMOD]
GRA 001	Cemetery	*LPAST? GAR?*
GRA 004	Cemetery	*LPAST? GAR?*
GRE 001	Cemetery	CGAR, LGAR, [ISLAM]
GRE 002	Cemetery	CGAR, LGAR
GRE 003	Cemetery	CGAR, LGAR
GRE 004	Cemetery	*LPAST? GAR?*
GRE 006	Cemetery	*LPAST? GAR?*
GRE 007	Cemetery	*LPAST? GAR?*
GRE 008	Cemetery	*LPAST? GAR?*
GRE 009	Cemetery	*LPAST? GAR?*
GRE 010	Cemetery	*PUGAR? CGAR?*
GRE 011	Cemetery	*PUGAR? CGAR?*
GRE 012	Cemetery	PUGAR? CGAR?
GRE 013	Cemetery	*LPAST? GAR?*
GRE 014	Cemetery	*LPAST? GAR?*
GRE022	Cemetery	*PUGAR? CGAR?*
GSC 001	Cemetery	CGAR, LGAR
GSC 002	Cemetery	PUGAR, CGAR
GSC 003	Cemetery	CGAR, LGAR
GSC 004	Cemetery	CGAR
GSC 005	Cemetery	CGAR, LGAR
GSC 006	Cemetery	CGAR
GSC 007	Cemetery	CGAR
GSC 008	Cemetery	PUGAR, CGAR
GSC 009	Cemetery	*PUGAR, CGAR?*
GSC 010	Cemetery	EMOD
GSC 011	Cemetery	CGAR
GSC 012	Cemetery	CGAR
GSC 013	Cemetery	PUGAR. CGAR
GSC 014	Cemetery	*PUGAR?*
GSC 015	Cemetery	PUGAR, CGAR
GSC 017	Cemetery	PUGAR

GSC 018	Cemetery	?
Site Code	**Site Type**	**Chronological Periods**
GSC 019	Cemetery	*PUGAR?*
GSC 020	Cemetery	CGAR
GSC 021	Cemetery	CGAR
GSC 022	Cemetery	*LPAST? GAR? GAR-EMOD*
GSC 023	Cemetery	CGAR, *GAR-EMOD*
GSC 024	Cemetery	CGAR? EMOD
GSC 025	Cemetery	CGAR
GSC 026	Cemetery	*LPAST? GAR?*
GSC 027	Cemetery	*LPAST? GAR?*
GSC 030	Cemetery	CGAR, LGAR
GSC 031	Cemetery	CGAR, LGAR
GSC 038	Cemetery	CGAR
GSC 042	Cemetery	*LPAST? GAR?*
GSC 046	Cemetery	*LPAST? GAR?*
GSC 048	Cemetery	*LPAST? GAR?*
ITF 002	Cemetery	*PUGAR?*
ITF 003	Cemetery	*PUGAR? CGAR?*
ITF 010	Cemetery	*GAR?*
ITF 011	Cemetery	*GAR?*
ITF 012	Cemetery	PUGAR, CGAR
ITF 016	Cemetery	*GAR?*
ITF 018	Cemetery	*PUGAR, CGAR*
ITF 019	Cemetery	*LPAST? GAR?*
ITF 020	Cemetery	*LPAST? GAR?*
ITF 021	Cemetery	*LPAST? GAR?*
ITF 022	Cemetery	*LPAST? GAR?*
ITF 023	Cemetery	*LPAST? GAR?*
ITF 024	Cemetery	*LPAST? GAR?*
ITF 025	Cemetery	*LPAST? GAR?*
ITF 026	Cemetery	*GAR*
ITF 028	Cemetery	*GAR*
LAR 002	Cemetery	CGAR
LAR 003	Cemetery	CGAR, LGAR
LAR 004	Cemetery	*LPAST? GAR?*
LAR 008	Cemetery	*LPAST? GAR?*
LAR 010	Cemetery	CGAR, LGAR
LEK 003	Cemetery	*CGAR*

LEK 004	Cemetery	*LPAST? GAR?*
Site Code	**Site Type**	**Chronological Periods**
LEK 005	Cemetery	CGAR
LEK 006	Cemetery	CGAR
LEK 007	Cemetery	CGAR
LEK 008	Cemetery	*LPAST? GAR?*
LEK 009	Cemetery	CGAR, LGAR, ISLAM
LEK 010	Cemetery	*CGAR,* EMOD
LEK 011	Cemetery	CGAR
LEK 012	Cemetery	*GAR*
LEK 013	Cemetery	*LPAST? GAR?*
LEK 023	Cemetery	*LPAST? GAR?*
LGR 006	Cemetery	*LPAST? GAR?*
LGR 007	Cemetery	*LPAST? GAR?*
LGR 008	Cemetery	*LPAST? GAR?*
LGR 009	Cemetery	*LPAST? GAR?*
LGR 027	Cemetery	*GAR?*
LGR 029	Cemetery	*PUGAR*
MAR 002	Cemetery	*GAR?*
MAR 003	Cemetery	*GAR?*
MAR 004	Cemetery	*GAR?*
MAR 005	Cemetery	*GAR?*
MAR 006	Cemetery	*LPAST? GAR?*
MAR 007	Cemetery	*GAR?*
MAR 008	Cemetery	*GAR?*
MAR 012	Cemetery	*GAR?*
NSH 001	Cemetery	*LPAST? GAR?*
NSH 002	Cemetery	CGAR
NSH 003	Cemetery	CGAR
NSH 004	Cemetery	*GAR?*
NSH 005	Cemetery	*GAR?*
NSH 008	Cemetery	*GAR?*
NSH 010	Cemetery	*GAR?*
NSH 015	Cemetery	*GAR?*
NSH 020	Cemetery	*LPAST? GAR?*
NSH 022	Cemetery	*LPAST? GAR?*
NSH 023	Cemetery	*LPAST? GAR?*
NSH 024	Cemetery	*GAR?*
NSH 025	Cemetery	*GAR?*
NSH 026	Cemetery	CGAR

NSH 027	Cemetery	CGAR
Site Code	**Site Type**	**Chronological Periods**
NSH 028	Cemetery	CGAR
NSH 029	Cemetery	*LPAST? GAR?*
NSH 031	Cemetery	*CGAR*
NSH 032	Cemetery	*GAR?*
NSH 033	Cemetery	*GAR?*
RUG 001	Cemetery	PUGAR, CGAR, LGAR
RUG 002	Cemetery	PUGAR, LGAR
RUG 003	Cemetery	CGAR, ISLAM
RUG 004	Cemetery	*PUGAR? CGAR?*
RUG 005	Cemetery	*CGAR*
RUG 006	Cemetery	PUGAR
RUG 010	Cemetery	*LPAST? GAR?*
RUG 011	Cemetery	*LPAST? GAR?*
RUG 012	Cemetery	*LPAST? GAR?*
RUG 013	Cemetery	LGAR
RUG 021	Cemetery	CGAR
RUG 022	Cemetery	CGAR, LGAR
SCH 001	Cemetery	CGAR
SCH 002	Cemetery	CGAR?
SCH 003	Cemetery	CGAR
SCH 004	Cemetery	CGAR
SCH 005	Cemetery	CGAR
SCH 006	Cemetery	*CGAR?*
SCH 007	Cemetery	*CGAR*
SCH 008	Cemetery	*CGAR*
SCH 009	Cemetery	*CGAR*
SCH 010	Cemetery	*CGAR*
SCH 011	Cemetery	*LPAST? GAR?*
SCH 012	Cemetery	*CGAR*
SCH 013	Cemetery	*LPAST? GAR?*
SCH 014	Cemetery	*CGAR*
SCH 015	Cemetery	*LPAST? GAR?*
SCH 016	Cemetery	*LPAST? GAR?*
SCH 017	Cemetery	*LPAST? GAR?*
SCH 018	Cemetery	CGAR
SCH 022	Cemetery	*EISLAM? ISLAM?*
SCH 027	Cemetery	*LPAST? GAR?*
TAB 004	Cemetery	LPAST

TAB 006	Cemetery	*GAR?*
Site Code	**Site Type**	**Chronological Periods**
TAB 007	Cemetery	*GAR?*
TAB 008	Cemetery	*GAR?*
TAB 009	Cemetery	*LPAST [PAL]*
TAB 020	Cemetery	*LPAST? GAR?*
TAB 023	Cemetery	*GAR?*
TAG 001	Cemetery	PUGAR, CGAR, LGAR
TAG 002	Cemetery	*LPAST? GAR?*
TAG 003	Cemetery	*LPAST? GAR?*
TAG 004	Cemetery	*LPAST? GAR?*
TAG 005	Cemetery	*LPAST? GAR?*
TAG 006	Cemetery	PUGAR, CGAR
TAG 007	Cemetery	*PUGAR*
TAG 013	Cemetery	*PUGAR*
TAG 014	Cemetery	PUGAR. LGAR
TAG 021	Cemetery	PUGAR
TAG 026	Cemetery	CGAR
TAG 027	Cemetery	CGAR
TAG 036	Cemetery	*CGAR*
TEK 001	Cemetery	*CGAR*
TEK 002	Cemetery	CGAR
TEK 003	Cemetery	*LPAST? GAR?*
TEK 004	Cemetery	*LPAST? GAR?*
TEK 005	Cemetery	*LPAST? GAR?*
TEK 006	Cemetery	*LPAST? GAR?*
TEK 007	Cemetery	*PUGAR? CGAR?*
TEK 010	Cemetery	EMOD
TEK 013	Cemetery	*LPAST? GAR?*
TIN 003	Cemetery	GAR
TIN 004	Cemetery	GAR
TIN 006	Cemetery	CGAR
TIN 008	Cemetery	LGAR
TIN 010	Cemetery	*LPAST? GAR?*
TIN 013	Cemetery	*LPAST? GAR?*
TIN 014	Cemetery	*LPAST? GAR? CGAR*
TIN 015	Cemetery	*LPAST? GAR?*
TMT 005	Cemetery	*GAR?*
TWE 002	Cemetery	CGAR
TWE 004	Cemetery	PUGAR

TWE 005	Cemetery	*LPAST? GAR?*
Site Code	**Site Type**	**Chronological Periods**
TWE 006	Cemetery	*LPAST? GAR?*
TWE 007	Cemetery	CGAR
TWE 008	Cemetery	*GAR?*
TWE 009	Cemetery	*LPAST? GAR?*
TWE 010	Cemetery	CGAR
TWE 011	Cemetery	PUGAR, CGAR, LGAR
TWE 012	Cemetery	*PUGAR?*
TWE 013	Cemetery	*PUGAR, CGAR*
TWE 014	Cemetery	*LPAST? GAR?*
TWE 015	Cemetery	CGAR
TWE 045	Cemetery	[CGAR]
UAT 002	Cemetery	CGAR, LGAR
UAT 004	Cemetery	PUGAR, CGAR
UAT 005	Cemetery	CGAR
UAT 006	Cemetery	PUGAR, CGAR
UAT 007	Cemetery	*PUGAR?*
UAT 008	Cemetery	PUGAR, CGAR
UAT 009	Cemetery	PUGAR, CGAR
UAT 010	Cemetery	*GAR?*
UAT 011	Cemetery	CGAR
UAT 012	Cemetery	*PUGAR,* CGAR
UAT 013	Cemetery	PUGAR, CGAR
UAT 014	Cemetery	PUGAR
UAT 015	Cemetery	*LPAST? GAR?*
UAT 016	Cemetery	*GAR*
UAT 017	Cemetery	CGAR
UAT 018	Cemetery	*LPAST? GAR?*
UTB 019	Cemetery	*LPAST? GAR?*
UTB 020	Cemetery	*LPAST? GAR?*
UTB 021	Cemetery	*LPAST? GAR?*
UTB 022	Cemetery	*GAR?*
UTB 024	Cemetery	*LPAST? GAR?*
UTB 025	Cemetery	*LPAST? GAR?*
UTB 026	Cemetery	*LPAST? GAR?*
ZIN 013	Cemetery	EGAR, PUGAR, CGAR
ZIN 020	Cemetery	CGAR
ZIN 109	Cemetery	PUGAR, CGAR [EMOD]
ZIN 116	Cemetery	CGAR

ZIN 117	Cemetery	CGAR
Site Code	**Site Type**	**Chronological Periods**
ZIN 119	Cemetery	EGAR, PUGAR, CGAR
ZIN 173	Cemetery	CGAR
ZIN 217	Cemetery	*GAR?*
ZIN 218	Cemetery	*GAR?*
ZIN 219	Cemetery	*GAR?*
ZIN 220	Cemetery	PUGAR, CGAR
ZIN 280	Cemetery	CGAR [EMOD]
ZIN 281	Cemetery	CGAR
ZIN 282	Cemetery	*GAR*
ZIN 283	Cemetery	*GAR*
ZIN 284	Cemetery	CGAR
ZIN 285	Cemetery	GAR
ZIN 286	Cemetery	*CGAR*
ZIN 287	Cemetery	CGAR
ZIN 288	Cemetery	LPAST? GAR?
ZIN 290	Cemetery	CGAR
ZIN 291	Cemetery	PUGAR
ZIN 292	Cemetery	CGAR
ZIN 293	Cemetery	*PUGAR*
ZIN 294	Cemetery	*PUGAR*
ZIN 295	Cemetery	PUGAR? CGAR
ZIN 296	Cemetery	PUGAR
ZIN 330	Cemetery	CGAR
ZIN 350	Cemetery	*CGAR?*
ZIN 351	Cemetery	*PUGAR?*
ZIN 352	Cemetery	*PUGAR?*
ZOU 001	Cemetery	CGAR, LGAR
ZOU 002	Cemetery	CGAR, LGAR
ZOU 003	Cemetery	CGAR
ZOU 004	Cemetery	CGAR, LGAR
ZOU 005	Cemetery	CGAR
ZOU 006	Cemetery	PUGAR, CGAR, LGAR
ZOU 007	Cemetery	CGAR, LGAR
ZOU 008	Cemetery	CGAR
ZOU 009	Cemetery	CGAR
ZOU 010	Cemetery	*LPAST? GAR?*
ZOU 011	Cemetery	CGAR
ZOU 012	Cemetery	*LPAST? GAR?*

ZOU 013	Cemetery	*LPAST? GAR?*
Site Code	**Site Type**	**Chronological Periods**
ZOU 014	Cemetery	*LPAST? GAR?*
ZOU 022	Cemetery	*LPAST? GAR?*
ZOU 023	Cemetery	CGAR
ZOU 024	Cemetery	*LPAST? GAR?*
ZOU 025	Cemetery	CGAR
ZUL 003	Cemetery	*EISLAM, ISLAM*
ZUL 005	Cemetery	CGAR
ZUL 006	Cemetery	CGAR
ZUL 008	Cemetery	*GAR?*
ZUL 009	Cemetery	*GAR?*
CHA 001	Cemetery (pyramid)	EGAR, PUGAR, CGAR, LGAR
ELH 001	Cemetery (pyramid)	CGAR [EMOD]
ELH 002	Cemetery (pyramid)	CGAR [E-MPAST]
ELH 007	Cemetery (pyramid)?	*CGAR*
GER 013	Cemetery (pyramid)?	*CGAR*
TAG 012	Cemetery (pyramid)	CGAR
TAG 032	Cemetery (pyramid)	CGAR
TWE 001	Cemetery (pyramid)	PUGAR, CGAR [EMOD]
BBA 014	Cemetery?	*LPAST? GAR?*
BNH 003	Cemetery?	*LPAST? GAR?*
BNH 004	Cemetery?	*LPAST? GAR?*
CHA 008	Cemetery?	*GAR?*
GER 026	Cemetery?	CGAR
GRE 005	Cemetery?	*LPAST? GAR?*
GSC 016	Cemetery?	PUGAR
TEK 017	Cemetery?	? [PAL]
UTB 007	Cemetery?	*LPAST? GAR?*
ZOU 016	Cemetery?	*LPAST? GAR?*
GER 013	Funerary monument	CGAR
ITF 013	Funerary monument	*LPAST? GAR?*
UAT 003	Funerary monument	PUGAR, CGAR
GDD 011	Funerary monument?	*GAR-EMOD?*
TIN 022	Funerary monument?	[CGAR] *EMOD?*
ZUL 003	Funerary monuments	*EISLAM, ISLAM*
EDS 025	Grave	*ISLAM-EMOD*
GSC 061	Grave?	?
GSC 063	Grave?	?
GSC 064	Grave?	?
ITF 014	Graves	*ISLAM-EMOD*
CHA 025	Marabout tomb	*ISLAM-EMOD*
FJJ 046	Marabout tomb	*ISLAM-EMOD*
FUG 019	Marabout tomb	*ISLAM-EMOD*
GER 007	Marabout tomb	*ISLAM-EMOD*
TIN 016	Marabout tomb	*ISLAM-EMOD*
FUG 001	Marabout tomb,	PUGAR, CGAR, *ISLAM-EMOD*
GER 001	Marabout tombs	*ISLAM-EMOD*
TWE 001	Mausolea	PUGAR, CGAR [EMOD]
FUG 001	Mausoleum	PUGAR, CGAR, ISLAM, EMOD
FUG 001	Mausoleum	PUGAR, CGAR, [ISLAM, EMOD]
UAT 001	Mausoleum	PUGAR, CGAR

Table 0.3. Sites of human habitation. See also lithics scatters under Table 0.6 (many of which may relate to prehistoric camp sites and activity loci). Enclosures not associated with qsur *are listed in Table 0.4.*

Site Code	**Site Type**	**Chronological periods**
ELH 024	Cave	?
EDS 026	Cave	*GAR-EMOD*
FJJ 025	Cave	*PAST*
TWE 022	Cave	*GAR-EMOD*
GBD 001	Enclosed settlement	PUGAR, CGAR, LGAR, ISLAM
GEL 002	Enclosed settlement	*ISLAM,* EMOD
GEL 005	Enclosed settlement	*GAR-EMOD?*
GEL 029	Enclosed settlement	CGAR
NSH 021	Enclosed settlement	*GAR-EMOD?*
TAG 020	Enclosed settlement	CGAR [EMOD]

Site Code	Site Type	Chronological Periods
TWE 017	Enclosed settlement	ISLAM, EMOD
TAG 011	Enclosed settlement	CGAR
BNH 005	Enclosed settlement	*GAR?* ISLAM, EMOD
ELH 009	Enclosed settlement	*CGAR*?
GEL 004	Enclosed settlement	*ISLAM, EMOD*
GEL 011	Enclosed settlement	*ISLAM, EMOD*
GER 004	Enclosed settlement	CGAR, ISLAM, EMOD
LAR 011	Enclosed settlement	*GAR-EMOD?*
ZOU 015	Enclosed settlement	ISLAM, EMOD
UTB 015	Enclosed settlement	*GAR-EMOD?*
GEL 026	Enclosure (with *qasr*)	*GAR-EMOD?*
LGR 003	Enclosure (with *qasr*)	*GAR-ISLAM?*
MZQ 007	Enclosure (with *qasr*)	*GAR-EMOD?*
NSH 006	Enclosure (with *qasr*)	*GAR-EMOD?*
NSH 011	Enclosure (with *qasr*)	*GAR-EMOD?*
NSH 013	Enclosure (with *qasr*)	*GAR-EMOD?*
UTB 006	Enclosure (with *qasr*)	*GAR-EMOD?*
UTB 008	Enclosure (with *qasr*)	*GAR-EMOD?*
UTB 010	Enclosure (with *qasr*)	*GAR-EMOD?*
UTB 011	Enclosure (with *qasr*)	*GAR-EMOD?*
UTB 013	Enclosure (with *qasr*)	*GAR-EMOD?*
UTB 014	Enclosure (with *qasr*)	*GAR-EMOD?*
UTB 018	Enclosure (with *qasr*)	*GAR-EMOD?*
ZUL 004	Enclosure (with *qasr*)	*GAR-EMOD?*
MZQ 004	Enclosure (with *qasr*)	*GAR-EMOD?*
BBA 013	Enclosure (with *qasr*?)	CGAR, LGAR, *ISLAM-EMOD?*

Site Code	Site Type	Chronological Periods
GER 020	Enclosure (with *qasr*?)	*GAR-ISLAM?*
UTB 012	Enclosure (with *qasr*?)	*GAR-EMOD?*
UTB 028	Enclosure (with *qasr*?)	*GAR-EMOD?*
UTB 029	Enclosure (with *qasr*?)	*GAR-EMOD?*
ABD 003	Enclosure? (with *qasr*?)	*GAR-EMOD?*
ELH 003	Enclosures (with *qasr*)	PUGAR, CGAR, [EMOD]
GDD 009	Enclosures (with *qasr*)	*GAR-EMOD?*
NSH 018	Enclosures (with *qasr*)	*GAR-EMOD?*
UTB 001	Enclosures (with *qasr*)	*GAR-EMOD?*
BBA 015	Escarpment settlement	CGAR, LGAR
GSC 040	Escarpment settlement	*EGAR? POSTGAR?*
ITF 027	Escarpment settlement	*EGAR? PUGAR?*
TIN 001	Escarpment settlement	LPAST? EGAR? PUGAR, CGAR
TWE 021	Escarpment settlement	EGAR, PUGAR, [LGAR]
LEK 001-2	Escarpment settlement	LPAST? EGAR, PUGAR, ISLAM, EMOD
ZIN 001-3	Escarpment settlement	LPAST, EGAR, PUGAR, CGAR
CHA 004-7	Escarpment settlement	EGAR, PUGAR, CGAR
CLF 001-2	Escarpment settlement, enclosure	EGAR, PUGAR, CGAR, LGAR, ISLAM, EMOD
ITF 001	Escarpment settlement, inscription	*EGAR*, PUGAR, CGAR
CLF 008-10	Escarpment settlement, wall	LPAST, EGAR, PUGAR, CGAR
GRE021	Escarpment settlement?	*EGAR?*
UAT 021	Escarpment settlement?	*EGAR? [PAL]*
TAB 016	Hearth	*PAST*
FUG 023	Mosque	*ISLAM-EMOD*
LEK 004	Mosque	*EMOD?*
LEK 018	Mosque	ISLAM, EMOD
TEK 010	Mosque	*EMOD*

Site Code	Site Type	Chronological Periods
ZUL 002	Mosque	*ISLAM*
TIN 021	Mosques	*EMOD*
GER 034	Occupation	PREPAST? E-MPAST
EDU 005	Occupation	MPAST, PREPAST, PAL
FJJ 039	Occupation	PAST
GER 031	Occupation	MPAST
GER 032	Occupation	[PAL] MPAST
GER 033	Occupation	MPAST [EMOD]
GER 035	Occupation	E-MPAST
GER 036	Occupation	MPAST
GER 037	Occupation	PAL [PUGAR]
GER 038	Occupation	MPAST
BBG 008	Occupation	PAST
BBG 011	Occupation	PAST
GSC 062	Occupation	?
SCH 019	Occupation	PAST
SCH 021	Occupation	PAST
TAB 016	Occupation	PAST
TAB 017	Occupation	PAST
TAB 018	Occupation	PAST
CHA 008	Occupation	GAR?
MAR 009	Occupation	PAST
MAR 010	Occupation	PAST [CGAR]
EDU 001	Occupation?	PAL, PAST
ELH 034	Occupation?	PAST
ELH 036	Occupation?	PAL, PAST
FJJ 043	Occupation?	PAST
FJJ 044	Occupation?	E-MPAST
FJJ 045	Occupation?	PAST
FJJ 049	Occupation?	[PAL?]
TAG 043	Occupation?	MPAST
BBG 004	Occupation?	PAST
BBG 005	Occupation?	PAST
FJJ 008	Occupation?	?
GBD 024	Occupation?	PAST?
GEL 007	Occupation?	PAST?
ZUL 001	*Qasr*	*EMOD*
MZQ 001	*Qasr*	*EMOD*
GER 001	*Qasr*	ISLAM, EMOD

Site Code	Site Type	Chronological Periods
BBG 006	*Qasr*	*GAR-EMOD?*
BNH 012	*Qasr*	*ISLAM-EMOD?*
BNH 017	*Qasr*	*GAR-EMOD?*
CHA 023	*Qasr*	*ISLAM-EMOD?*
ELH 006	*Qasr*	PUGAR, CGAR [PAL]
FJJ 013	*Qasr*	CGAR
FJJ 014	*Qasr*	*ISLAM-EMOD?*
GBD 002	*Qasr*	CGAR, EMOD
GBD 005	*Qasr*	*GAR-EMOD?*
GBD 006	*Qasr*	*GAR-EMOD?*
GBD 007	*Qasr*	CGAR, LGAR, *ISLAM*
GBD 008	*Qasr*	*GAR-EMOD?*
GBD 009	*Qasr*	*GAR-EMOD?*
GBD 010	*Qasr*	CGAR
GBD 019	*Qasr*	*GAR-EMOD?*
GDD 005	*Qasr*	CGAR
GDD 006	*Qasr*	*GAR-EMOD?*
GDD 007	*Qasr*	CGAR, *GAR-EMOD?*
GDD 008	*Qasr*	*GAR-EMOD?*
GDD 012	*Qasr*	*GAR-EMOD?*
GEL 012	*Qasr*	*GAR-EMOD?*
GEL 013	*Qasr*	*GAR-EMOD?*
GER 014	*Qasr*	CGAR
GRE 015	*Qasr*	*ISLAM-EMOD?*
GRE 016	*Qasr*	*GAR-EMOD?*
LAR 001	*Qasr*	PUGAR. CGAR, LGAR
LEK 017	*Qasr*	CGAR. EMOD
LEK 019	*Qasr*	*GAR-EMOD?*
MZQ 002	*Qasr*	*GAR-EMOD?*
MZQ 003	*Qasr*	*GAR-EMOD?*
NSH 007	*Qasr*	*GAR-EMOD?*
NSH 009	*Qasr*	*GAR-EMOD?*
NSH 012	*Qasr*	*GAR-EMOD?*
NSH 016	*Qasr*	*GAR-EMOD?*
NSH 017	*Qasr*	*GAR-EMOD?*
NSH 019	*Qasr*	*GAR-EMOD?*
RUG 014	*Qasr*	*GAR-EMOD?*
RUG 016	*Qasr*	CGAR, ISLAM
RUG 023	*Qasr*	LGAR, *ISLAM?*

Site Code	Site Type	Chronological Periods
RUG 024	*Qasr*	CGAR, *ISLAM?*
SCH 025	*Qasr*	*GAR-ISLAM?*
SCH 026	*Qasr*	*GAR-ISLAM?*
TIN 017	*Qasr*	*ISLAM?*
TWE 026	*Qasr*	CGAR, ISLAM, EMOD
UTB 002	*Qasr*	*GAR-EMOD?*
UTB 004	*Qasr*	*GAR-EMOD?*
UTB 009	*Qasr*	*GAR-EMOD?*
UTB 016	*Qasr*	*GAR-EMOD?*
UTB 017	*Qasr*	*GAR-EMOD?*
UTB 027	*Qasr*	*GAR-EMOD?*
ELH 003	*Qasr*	PUGAR, CGAR, [EMOD]
TAG 011	*Qasr*	CGAR
BNH 005	*Qasr*	*GAR?* ISLAM, EMOD
ELH 009	*Qasr*	*CGAR*?
GEL 004	*Qasr*	*ISLAM-EMOD?*
GEL 011	*Qasr*	*ISLAM-EMOD?*
GER 004	*Qasr*	CGAR, ISLAM, EMOD
LAR 011	*Qasr*	*GAR-EMOD?*
ZOU 015	*Qasr*	ISLAM, EMOD
GEL 026	*Qasr*	*GAR-EMOD?*
LGR 003	*Qasr*	*GAR-ISLAM?*
MZQ 007	*Qasr*	*GAR-EMOD?*
NSH 006	*Qasr*	*GAR-EMOD?*
NSH 011	*Qasr*	*GAR-EMOD?*
NSH 013	*Qasr*	*GAR-EMOD?*
UTB 006	*Qasr*	*GAR-EMOD?*
UTB 008	*Qasr*	*GAR-EMOD?*
UTB 010	*Qasr*	*GAR-EMOD?*
UTB 011	*Qasr*	*GAR-EMOD?*
UTB 013	*Qasr*	*GAR-EMOD?*
UTB 014	*Qasr*	*GAR-EMOD?*
UTB 018	*Qasr*	*GAR-EMOD?*
ZUL 004	*Qasr*	*GAR-EMOD?*
MZQ 004	*Qasr*	*GAR-EMOD?*
GDD 009	*Qasr*	*GAR-EMOD?*
NSH 018	*Qasr*	*GAR-EMOD?*
UTB 001	*Qasr*	*GAR-EMOD?*
TIN 016	*Qasr*	*ISLAM-EMOD?*

Site Code	Site Type	Chronological Periods
FJJ 020	*Qasr*	*GAR-ISLAM?*
FUG 022	*Qasr*	*ISLAM-EMOD?*
GER 009	*Qasr*	LGAR, ISLAM
LEK 021	*Qasr*	CGAR, *ISLAM-EMOD?*
LEK 022	*Qasr*	*ISLAM-EMOD?*
MZQ 008	*Qasr*	*ISLAM-EMOD?*
FJJ 056	*Qasr*	CGAR, *LGAR, ISLAM-EMOD*
TEK 010	*Qasr*	*EMOD*
LEK 018	*Qasr*	ISLAM, EMOD
ZUL 010	*Qasr*	CGAR, ISLAM
CLF 026	*Qasr*	*GAR-EMOD?*
MAR 001	*Qasr*	CGAR, LGAR, ISLAM
GBD 001	*Qasr*	LGAR
BBA 011	*Qasr?*	*GAR-EMOD?*
BBA 012	*Qasr?*	*GAR-EMOD?*
BNH 020	*Qasr?*	*GAR-EMOD?*
CLF 031	*Qasr?*	*GAR-EMOD?*
ELH 014	*Qasr?*	*GAR?*
ELH 015	*Qasr?*	*GAR?*
GER 019	*Qasr?*	*GAR-ISLAM?*
GRE 020	*Qasr?*	*GAR-EMOD?*
LGR 001	*Qasr?*	*CGAR?*
LGR 002	*Qasr?*	*GAR-ISLAM?*
MZQ 005	*Qasr?*	*GAR-EMOD?*
MZQ 006	*Qasr?*	*GAR-EMOD?*
RUG 015	*Qasr?*	*GAR-EMOD?*
RUG 026	*Qasr?*	*GAR-EMOD?*
TMT 006	*Qasr?*	*LGAR?*
UTB 005	*Qasr?*	*GAR-EMOD?*
UTB 023	*Qasr?*	*GAR-EMOD?*
UTB 030	*Qasr?*	*GAR-EMOD?*
SCH 020	*Qsur*	LGAR, POSTGAR, EISLAM
ELH 003	Settlement	PUGAR, CGAR, [EMOD]
FJJ 020	Settlement	*GAR-ISLAM?*
FUG 022	Settlement	*ISLAM-EMOD?*
GER 009	Settlement	LGAR, ISLAM
LEK 021	Settlement	CGAR, *ISLAM-EMOD?*
LEK 022	Settlement	*ISLAM-EMOD?*

Site Code	Site Type	Chronological Periods
MZQ 008	Settlement	*ISLAM-EMOD?*
FJJ 056	Settlement	CGAR, *LGAR, ISLAM-EMOD*
TEK 010	Settlement	*EMOD*
LEK 018	Settlement	ISLAM, EMOD
ZUL 010	Settlement	CGAR, ISLAM
BBA 005	Settlement	*GAR-EMOD?*
CHA 026	Settlement	PUGAR, CGAR
CHA 027	Settlement	PUGAR, CGAR
CHA 030	Settlement	CGAR
DBD 002	Settlement	*GAR-EMOD?*
EDU 014	Settlement	*ISLAM-EMOD?*
ELH 005	Settlement	PUGAR, CGAR [PAL]
ELH 008	Settlement	CGAR, [PAL]
FJJ 001	Settlement	CGAR, EMOD
GBD 003	Settlement	*GAR-EMOD?*
GEL 003	Settlement	?
GER 002	Settlement	PUGAR, CGAR, LGAR, [EMOD]
GER 005	Settlement	CGAR
GER 006	Settlement	CGAR? [PAL]
GER 010	Settlement	CGAR
GER 015	Settlement	CGAR, LGAR, ISLAM, EMOD
GER 016	Settlement	PAL, PAST, PUGAR, CGAR, LGAR, EISLAM, ISLAM,
GER 017	Settlement	CGAR
GER 021	Settlement	*GAR-ISLAM?*
GER 027	Settlement	CGAR [ISLAM, EMOD]
GRA 002	Settlement	LPAST, EGAR, PUGAR
SCH 023	Settlement	CGAR
TEK 011	Settlement	*ISLAM-EMOD?*
TWE 029	Settlement	CGAR
FJJ 011	Settlement	*ISLAM-EMOD?*
TWE 028	Settlement	CGAR
MAR 001	Settlement	CGAR, LGAR, ISLAM
TAG 030	Settlement?	[PAL], PAST
CLF 026	Settlement?	*GAR-EMOD?*
EDS 010	Settlement?	ISLAM, EMOD
FJJ 008	Settlement?	?
GER 008	Settlement?	LPAST, CGAR
GER 028	Settlement?	CGAR
GSC 065	Settlement?	*GAR?*
TWE 027	Settlement?	CGAR, ISLAM, EMOD
GER 026	Settlement?	CGAR
GEL 007	Settlement?	PAST?
ZUL 001	Urban settlement	EISLAM, ISLAM, EMOD
MZQ 001	Urban settlement	ISLAM, EMOD
GER 001	Urban settlement	PUGAR, CGAR, LGAR, POSTGAR, EISLAM, ISLAM, EMOD
SCH 020	Urban settlement	CGAR, LGAR, POSTGAR, EISLAM
GBD 001	Urban settlement?	PUGAR, CGAR, LGAR, ISLAM
ZUL 001	Wall	*ISLAM, EMOD*
MZQ 001	Wall	*ISLAM, EMOD*
GER 001	Wall	ISLAM, EMOD
FUG 016	Wall	*GAR?*
TEK 008	Wall	*GAR?*
TIN 002	Wall	*PUGAR*
ZIN 900.1	Wall	*PUGAR*
ZIN 900.2	Wall	*PUGAR*
ZIN 900.3	Wall	*PUGAR*
ZIN 900.4	Wall	*PUGAR*
ZIN 900.5	Wall	*PUGAR*
ZIN 900.6	Wall	PUGAR
ZIN 900.7	Wall	*PUGAR*
ZIN 900.8	Wall	*PUGAR*
ZIN 900.9	Wall	*PUGAR*

Table 0.4. Landuse and hydraulic features. See also under Table 0.3 for enclosures associated with qsur.

Site Code	Site Type	Chronological Periods
CHA 003	Enclosure	*GAR*
NSH 014	Enclosure	*GAR-EMOD?*
LAR 009	Enclosures	GAR? *ISLAM-EMOD*
LAR 009	Field system	GAR? *ISLAM-EMOD?*
MZQ 004	Field system	*GAR-EMOD?*
ZUL 007	Field system	CGAR, EMOD

Site Code	Site Type	Chronological Periods
TWE 023	Field systems?	*GAR?*
ABD 001	Foggara	*GAR*
BBA 009	Foggara	*GAR*
BBA 010	Foggara	*GAR*
CHA 031	Foggara	*GAR*
FJJ 019	Foggara	*GAR*
ITF 004	Foggara	*GAR*
ITF 005	Foggara	*GAR*
ITF 006	Foggara	*GAR*
ITF 007	Foggara	*GAR*
ITF 008	Foggara	*GAR*
ITF 009	Foggara	*GAR*
ITF 015	Foggara	*GAR*
ITF 017	Foggara	*GAR*
LAR 005	Foggara	*GAR*
LAR 006	Foggara	*GAR*
LAR 007	Foggara	*GAR*
TAB 005	Foggara	*GAR*
TAB 010	Foggara	*GAR*
TEK 014	Foggara group	*GAR*
BBA 008	Foggara group	*GAR*
BNH 006	Foggara group	*GAR*
BNH 007	Foggara group	*GAR*
BNH 008	Foggara group	*GAR*
BNH 009	Foggara group	*GAR*
BNH 010	Foggara group	*GAR*
CHA 009	Foggara group	*GAR*
CHA 010	Foggara group	*GAR*
CHA 011	Foggara group	*GAR*
CLF 011	Foggara group	*GAR*
CLF 015	Foggara group	*GAR*
CLF 018	Foggara group	*GAR*
CLF 020	Foggara group	*GAR*
CLF 022	Foggara group	*GAR*
CLF 023	Foggara group	*GAR*
DBD 003	Foggara group	*GAR*
EDS 007	Foggara group	*GAR*
EDS 008	Foggara group	CGAR
EDS 009	Foggara group	*GAR*

Site Code	Site Type	Chronological Periods
ELH 010-11	Foggara group	*GAR*
ELH 012	Foggara group	*GAR*
ELH 013	Foggara group	*GAR*
FJJ 015	Foggara group	*GAR*
FJJ 016	Foggara group	*GAR*
FJJ 017	Foggara group	*GAR*
FJJ 018	Foggara group	*GAR*
FUG 017	Foggara group	*GAR*
GDD 010	Foggara group	*GAR*
GEL 014	Foggara group	*GAR*
GEL 015	Foggara group	*GAR*
GEL 016	Foggara group	*GAR*
GEL 025	Foggara group	*GAR*
GRA 003	Foggara group	*GAR*
GRA 005	Foggara group	*GAR*
GRE 017	Foggara group	*GAR*
GRE 018	Foggara group	*GAR*
GRE 019	Foggara group	*GAR*
GSC 032	Foggara group	*GAR*
GSC 033	Foggara group	*GAR*
GSC 036	Foggara group	*GAR*
LEK 014	Foggara group	*GAR*
LEK 015	Foggara group	*GAR*
LEK 016	Foggara group	*GAR, ISLAM*
LEK 020	Foggara group	*GAR*
LGR 004	Foggara group	*GAR*
LGR 005	Foggara group	*GAR*
MAR 011	Foggara group	*GAR*
NSH 030	Foggara group	*GAR*
RUG 017	Foggara group	*GAR*
RUG 018	Foggara group	*GAR*
RUG 019	Foggara group	*GAR*
RUG 020	Foggara group	*GAR*
SCH 028	Foggara group	*GAR*
TAG 008	Foggara group	PUGAR, CGAR
TEK 009	Foggara group	*GAR*
TEK 012	Foggara group	*GAR*
TIN 007	Foggara group	*GAR*
TIN 009	Foggara group	*GAR*

Site Code	Site Type	Chronological Periods
TIN 011	Foggara group	*GAR*
TIN 012	Foggara group	*GAR*
TMT 001	Foggara group	*GAR*
TMT 002	Foggara group	CGAR [PAL]
TMT 003	Foggara group	*GAR*
TMT 004	Foggara group	*GAR*
TWE 016	Foggara group	*GAR*
TWE 018	Foggara group	*GAR*
UAT 020	Foggara group	*GAR*
UTB 003	Foggara group	*GAR*
ZOU 017	Foggara group	*GAR*
ZOU 018	Foggara group	*GAR*
ZOU 019	Foggara group	*GAR*
ZOU 020	Foggara group	*GAR*
ZUL 011	Foggara group	*GAR*
GER 012	Well	*ISLAM-EMOD?*
GER 040	Well	*ISLAM-EMOD?*
GER 041	Well	*ISLAM-EMOD?*
GER 042	Well	*ISLAM-EMOD?*
GER 043	Well	*ISLAM-EMOD?*
GER 044	Well	*ISLAM-EMOD?*
GER 045	Well	*ISLAM-EMOD?*
GER 046	Well	*ISLAM-EMOD?*
GER 047	Well	*ISLAM-EMOD?*
GER 048	Well	*ISLAM-EMOD?*
GER 049	Well	*ISLAM-EMOD?*
LAR014	Well	*ISLAM-EMOD?*
LEK 018	Well	*ISLAM-EMOD?*
TWE 025	Well	*ISLAM-EMOD?*
TWE 038	Well	*ISLAM-EMOD?*
TWE 039	Well	*ISLAM-EMOD?*
ZUL 010	Well	CGAR, ISLAM

Table 0.5. Miscellaneous sites

Site Code	Site Type	Chronological Periods
CHA 002	Inscription	*GAR*
FUG 014	Inscription	CGAR
FUG 021	Inscription	*GAR-EMOD*
GSC 022	Inscription	*GAR-EMOD*
GSC 023	Inscription	*GAR-EMOD*
GSC 043	Inscription	*GAR-EMOD*
GSC 045	Inscription	*GAR-EMOD*
ITF 004	Inscription	*GAR*
RUG 008	Inscription	*GAR-EMOD*
TAG 001	Inscription	PUGAR, CGAR, LGAR
TWE 024	Inscription	*GAR-EMOD*
TWE 033	Inscription	*GAR, ISLAM-EMOD*
UAT 022	Inscription	*GAR-EMOD*
ZIN 903	Inscription	*GAR-EMOD*
EDS 026	Inscriptions	*GAR-EMOD*
FJJ 027	Inscriptions	*GAR-EMOD*
FJJ 028	Inscriptions	*LPAST, GAR, GAR-EMOD*
FUG 018	Inscriptions	*GAR-EMOD*
GEL 001	Inscriptions	*GAR-EMOD*
GSC 049	Inscriptions	*GAR-EMOD*
GSC 050	Inscriptions	*GAR-EMOD*
LGR 026	Inscriptions	*GAR-EMOD*
TAG 001	Inscriptions	*GAR-EMOD*
TAG 008	Inscriptions	PUGAR, CGAR
TAG 009	Inscriptions	*GAR-EMOD*
TAG 022	Inscriptions	*GAR-EMOD*
TAG 023	Inscriptions	*GAR-EMOD*
TAG 024	Inscriptions	*GAR-EMOD*
TAG 025	Inscriptions	*GAR-EMOD* [CGAR]
TAG 028	Inscriptions	*PAST, GAR-EMOD*
TIN 020	Inscriptions	*GAR-EMOD*
TIN 025	Inscriptions	*GAR-EMOD*
TIN 027	Inscriptions	*GAR-EMOD*
TWE 001	Inscriptions	*GAR-EMOD*
TWE 022	Inscriptions	*GAR-EMOD*
ZIN 902	Inscriptions	*GAR, GAR-EMOD*
BNH 019	Rock art	*PAST, GAR, GAR-EMOD*
DBD 004	Rock art	*PAST*
EDS 011	Rock art	*PUGAR? CGAR? [GAR-EMOD]*
EDS 011	Rock art	*PUGAR? CGAR? [GAR-EMOD]*

Site Code	Site Type	Chronological Periods
ELH 018	Rock art	*PAST*
FJJ 012	Rock art	*PAST, GAR-EMOD*
FJJ 022	Rock art	*PAST, GAR-EMOD*
FJJ 023	Rock art	*PAST*
FJJ 024	Rock art	*PAST*
FJJ 025	Rock art	*PAST*
FJJ 026	Rock art	*PAST*
FJJ 027	Rock art	LPAST, GAR-EMOD
FJJ 028	Rock art	*LPAST, GAR, GAR-EMOD*
FJJ 029	Rock art	*PAST*
FUG 018	Rock art	*GAR-EMOD*
FUG 019	Rock art	*PAST [ISLAM-EMOD]*
FUG 020	Rock art	*PAST*
FUG 021	Rock art	*PAST, GAR-EMOD*
GEL 001	Rock art	*GAR-EMOD*
GSC 041	Rock art	*PAST? LPAST? GAR?*
GSC 043	Rock art	*PAST, GAR-EMOD*
GSC 045	Rock art	*PAST, GAR-EMOD*
GSC 047	Rock art	*PAST*
GSC 050	Rock art	*GAR-EMOD*
GSC 051	Rock art	*PAST*
LGR 026	Rock art	*PAST, GAR-EMOD*
LGR 028	Rock art	*PAST*
RUG 008	Rock art	*GAR-EMOD*
TAG 009	Rock art	*PAST, GAR, GAR-EMOD*
TAG 022	Rock art	*PAST, GAR-EMOD*
TAG 023	Rock art	*GAR-EMOD*
TAG 024	Rock art	*PAST*
TAG 025	Rock art	*GAR-EMOD [CGAR]*
TAG 028	Rock art	*PAST, GAR-EMOD*
TAG 040	Rock art	*GAR-EMOD*
TAG 041	Rock art	*PAST*
TAG 042	Rock art	*PAST, [GAR-EMOD]*
TIN 025	Rock art	*GAR-EMOD*
TIN 027	Rock art	*GAR-EMOD*
TWE 024	Rock art	*PAST, GAR-EMOD*
TWE 033	Rock art	*PAST, GAR, ISLAM-EMOD*
TWE 034	Rock art	*PAST*
TWE 041	Rock art	*PAST*
ZIN 279	Rock art	*GAR*
ZIN 902	Rock art	*PAST, GAR, GAR-EMOD*
FJJ 041	Other structures	PAST?
GSC 054	Other structures	PAL
TIN 026	Other structures	?
EDU 029	Pottery scatter	*GAR-EMOD?*
GBD 024	Pottery scatter	PAST?
GSC 044	Pottery scatter	?
TAG 038	Pottery scatter	PUGAR?
TAB 013	Stone alignments	?
TAB 022	Stone alignments	?

Table 0.6. Activity sites and resource exploitation

Site Code	Site Type	Chronological Periods
CHA 024	Industrial site	*GAR-EMOD*
TWE 028	Industrial site	CGAR
TWE 029	Industrial site	CGAR
EDU 011	Lithic artefact	PAST
ELH 037	Lithic artefact	PAL
TAG 037	Lithic artefact	PAL
BBA 004	Lithics scatter	PAL?
BBG 013	Lithics scatter	M-LPAST
BBG 014	Lithics scatter	PAST
CLF 029	Lithics scatter	PAL
CLF 030	Lithics scatter	PAL
EDS 014	Lithics scatter	PAST
EDS 015	Lithics scatter	PAL, PAST
EDS 016	Lithics scatter	PAST
EDU 001	Lithics scatter	PAL, PAST
EDU 002	Lithics scatter	MPAST
EDU 003	Lithics scatter	PAL
EDU 004	Lithics scatter	PAL, PAST
EDU 005	Lithics scatter	MPAST, PREPAST, PAL
EDU 006	Lithics scatter	PAST
EDU 007	Lithics scatter	PAL, PAST

Site Code	Site Type	Chronological Periods
EDU 008	Lithics scatter	PAST
EDU 009	Lithics scatter	PAST
EDU 015	Lithics scatter	PAL
EDU 016	Lithics scatter	PAST
EDU 017	Lithics scatter	PAST
EDU 018	Lithics scatter	PAL, PAST [EGAR]
EDU 019	Lithics scatter	PAST
EDU 020	Lithics scatter	PAL, PAST
EDU 021	Lithics scatter	PAST
EDU 022	Lithics scatter	PAL, PAST
EDU 023	Lithics scatter	PAL, MPAST [EMOD]
EDU 024	Lithics scatter	MPAST
EDU 027	Lithics scatter	PAL?
EDU 028	Lithics scatter	MPAST, LPAST
ELH 008	Lithics scatter	PAL
ELH 020	Lithics scatter	PAL
ELH 021	Lithics scatter	PAL
ELH 022	Lithics scatter	PAL
ELH 023	Lithics scatter	PAL
ELH 025	Lithics scatter	PAL, *LPAST?*
ELH 026	Lithics scatter	PAL
ELH 030	Lithics scatter	PAST
ELH 031	Lithics scatter	PAST
ELH 032	Lithics scatter	LPAST, PAST
ELH 033	Lithics scatter	PAL, PAST
ELH 034	Lithics scatter	PAST
ELH 035	Lithics scatter	PAST
ELH 036	Lithics scatter	PAL, PAST
FJJ 021	Lithics scatter	EPAST
FJJ 030	Lithics scatter	PAL?
FJJ 031	Lithics scatter	PAL, PAST?
FJJ 032	Lithics scatter	PAL, PAST?
FJJ 033	Lithics scatter	PAL, PAST?
FJJ 034	Lithics scatter	PAL, PAST?
FJJ 035	Lithics scatter	PAL, PAST?
FJJ 036	Lithics scatter	PAL, PAST?
FJJ 037	Lithics scatter	PAL, PAST?
FJJ 038	Lithics scatter	PAL, PAST?
FJJ 039	Lithics scatter	PAST

Site Code	Site Type	Chronological Periods
FJJ 040	Lithics scatter	PAST?
FJJ 041	Lithics scatter	PAST?
FJJ 042	Lithics scatter	PAST
FJJ 043	Lithics scatter	PAST
FJJ 044	Lithics scatter	E-MPAST
FJJ 045	Lithics scatter	PAST
FJJ 049	Lithics scatter	[PAL?]
FJJ 050	Lithics scatter	PAST
FJJ 051	Lithics scatter	PAL
FJJ 052	Lithics scatter	PAL
FJJ 053	Lithics scatter	PAL
FJJ 054	Lithics scatter	PAL
FUG 025	Lithics scatter	M-LPAST
GBD 021	Lithics scatter	PAST, CGAR
GBD 022	Lithics scatter	PAST
GBD 023	Lithics scatter	PAST
GER 016	Lithics scatter	PAL, PREPAST, PAST, LPAST
GER 018	Lithics scatter	PREPAST, MPAST
GER 030	Lithics scatter	PAL, E-MPAST, PAST, LPAST
GER 031	Lithics scatter	MPAST
GER 032	Lithics scatter	[PAL] MPAST
GER 033	Lithics scatter	E-MPAST [EMOD]
GER 034	Lithics scatter	PREPAST? E-MPAST
GER 035	Lithics scatter	E-MPAST
GER 036	Lithics scatter	MPAST
GER 037	Lithics scatter	PAL [PUGAR]
GER 038	Lithics scatter	MPAST
GSC 052	Lithics scatter	PAL
GSC 053	Lithics scatter	PAL
GSC 054	Lithics scatter	PAL
GSC 055	Lithics scatter	PAL
GSC 056	Lithics scatter	PAL
LAR 012	Lithics scatter	PAL
LAR 013	Lithics scatter	PAL
LGR 010	Lithics scatter	PAL
LGR 011	Lithics scatter	PAL, PREPAST
LGR 012	Lithics scatter	PAL

Site Code	Site Type	Chronological Periods
LGR 013	Lithics scatter	PAL?
LGR 014	Lithics scatter	PAST?
LGR 015	Lithics scatter	PAL?
LGR 016	Lithics scatter	PAL
LGR 017	Lithics scatter	PAL?
LGR 018	Lithics scatter	PAL?
MAR 009	Lithics scatter	PAST
MAR 010	Lithics scatter	PAST [CGAR]
RUG 007	Lithics scatter	PAL
SCH 029	Lithics scatter	PAL, PAST, LPAST
TAB 011	Lithics scatter	PAL
TAB 015	Lithics scatter	PAL
TAB 021	Lithics scatter	PAL
TAB 030	Lithics scatter	PAL, PAST
TAB 031	Lithics scatter	PAL, MPAST
TAB 032	Lithics scatter	PAL
TAG 029	Lithics scatter	PAL
TAG 030	Lithics scatter	[PAL], PAST
TAG 031	Lithics scatter	PAST
TAG 033	Lithics scatter	PAL, PREPAST, PAST
TAG 034	Lithics scatter	PAL, PAST
TAG 035	Lithics scatter	PAST
TAG 043	Lithics scatter	MPAST
TEK 015	Lithics scatter	PAL
TEK 016	Lithics scatter	PAL
TEK 017	Lithics scatter	? [PAL]
TIN 035	Lithics scatter	M-LPAST
TWE 003	Lithics scatter	PAL?
TWE 035	Lithics scatter	PAL
TWE 036	Lithics scatter	PAL
TWE 042	Lithics scatter	PAL
TWE 043	Lithics scatter	PAL
UAT 019	Lithics scatter	PAL?
ZIN 901	Lithics scatter	PAL
ZIN 904	Lithics scatter	PAL [EGAR]
ZIN 905	Lithics scatter	PAL, LPAST
ZOU 026	Lithics scatter	PAL
GSC 034	Quarry	*GAR*
GSC 035	Quarry	*GAR?*
UAT 023	Quarry	*GAR*
ZIN 289	Quarry	GAR

Gazetteer sections

The Gazetteer is organised into a series of 39 sections covering the Wādī al-Ajāl, and outlying areas to the S and NE. Material from the far SW Fazzān is omitted here. Although the Wādī Tanzzūft and the area around Ghāt, *c.*350-400 km travel SW of Jarma, have also been recognised as producing significant remains of prehistoric and Garamantian date, those areas are the focus of current Italian work (Azebi *et al.* 2000; Castelli *et al.* 2005; Cremaschi and di Lernia 1996a; 1998a; di Lernia and Manzi 2002; Garcea and Sebastiani 1995; Liverani 2000a/b/c; 2004; 2006; Liverani *et al.* 2000). This exciting work is producing many interesting comparanda for (and some significant differences from) the archaeology presented here.

Neither have we attempted to represent fully the archaeology of the vast barren rock plateau of the Massāk Ṣaṭṭafat directly to the S of our zone. This is an area of much rock art research (to some extent catalogued by Lutz and Lutz 1995; van Albada and van Albada 2000) and also the scene of recent oil exploration (Anag *et al.* 2002; Garcea 1996; Kröpelin 2002). We have explored the fringes of the escarpment to a limited extent within the context of our project (and to a slightly greater extent in the context of environmental impact work with the oil companies). However, it seemed neither appropriate nor feasible to attempt a full catalogue of the extraordinary archaeology of the Massāk in this report.

In NE Fazzān, Sabhā was never surveyed in detail by CMD, though there are a number of good photographs from the 1960s of the then still-surviving elements of the constituent villages (notably al-Jadīd and al-Bawānis) that made up the oasis. These have all but entirely vanished beneath the extraordinary development of the modern capital of Fazzān, now a bustling city of *c.*75,000 population. Some targeted excavations within the city might shed light on the origins of this important oasis, but for the moment it remains an archaeological blank.

The Wādī al-Ajāl was divided into 26 areas, in CMD's original designations, from Tinda to al-Abyaḍ. To these, further sections have been added by us to cover: a) the area of the Wādī Irāwan immediately to the W of Ubārī where new data have been collected in recent years; b) sites to the S and E of the Ajāl, including Wādī Barjūj, Wādī an-Nashw'a and Wādī 'Utba, the al-Ḥufra depression around Murzuq and outliers around Zuwīla are also included; c) sites to N of the al-Ajāl, in the Wādī ash-Shāṭī and the Ubārī sand sea. Each section was given a 3-letter prefix for identifying sites and finds from them as indicated in the list below and on Figure 0.3.

A fuller concordance of place names with their main alternative spellings is included at the front of this book. The spellings adopted here have attempted to follow a simplified EI system as far as possible. However, it must be noted that definitive and/or official spellings for many of these are lacking and both Berber and Arabised versions of Berber names are encountered here.

Each section of the Gazetteer (with the exception of sections 30) is accompanied by a map on which the site locations are marked. The key for the sectional maps is given in Figure 0.8. All figures within each section of the Gazetteer are numbered as a series under that section number. Thus sites around Old Jarma are recorded on the sectional map (Fig. 10.1), with subsequent figures in that section being numbered as Fig. 10.2, Fig. 10.3 and so on. References to all relevant illustrations are given by figure number at the foot of each site entry in the Gazetteer. Illustrations published in *AF* 1 are indicated by page number, rather than figure number to avoid confusion.

The sites recorded for each area are listed below in sequence (Table 0.7) with the approximate GPS coordinates where known/calculated.

Table 0.7. List of all sites recorded by Fazzān Project and CMD work (in geographical sequence followed by Gazetteer)

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
1. Tin Abūndā			
TAB 001	Antenna tomb	26° 26.47	12° 23.73
TAB 002	Antenna tomb	26° 26.39	12° 23.80
TAB 003	Cairn	26° 26.45	12° 23.77
TAB 004	Antenna tomb, cemetery	26° 26.68	12° 24.77
TAB 005	Foggara	26° 26.68	12° 27.05
TAB 006	Cemetery		
TAB 007	Cemetery	26° 26.80	12° 25.26
TAB 008	Cemetery	26° 27.00	12° 27.46
TAB 009	Antenna tomb, cemetery	26° 30.00	12° 32.04
TAB 010	Foggara	26° 28.67	12° 27.05
TAB 011	Lithics scatter	26° 28.67	12° 27.00
TAB 012	Cairn	26° 28.59	12° 30.40
TAB 013	Stone alignments	26° 28.26	12° 30.52
TAB 014	Cairn	26° 28.10	12° 30.64
TAB 015	Lithics scatter	26° 28.19	12° 30.52
TAB 016	Hearth, occupation	26° 33.40	12° 30.96
TAB 017	Occupation	26° 31.76	12° 30.92
TAB 018	Occupation	26° 30.62	12° 31.39
TAB 019	Cairns	26° 30.16	12° 31.82
TAB 020	Cemetery	26° 30.00	12° 31.81
TAB 021	Lithics scatter	26° 30.10	12° 32.00
TAB 022	Stone alignments	26° 29.95	12° 31.96
TAB 023	Cemetery	26° 29.97	12° 31.99
TAB 030	Lithics scatter	26° 27.94	12° 27.62
TAB 031	Lithics scatter	26° 27.25	12° 24.93
TAB 032	Lithics scatter	26° 25.34	12° 34.22
2. In Ṭafārāt			
ITF 001	Escarpment settlement, inscription	31. 26° 51	12° 35.84
ITF 002	Cemetery	31.526° 7	12° 35.58
ITF 003	Cemetery	326° 1.57	12° 35.85
ITF 004	Foggara, inscription	26° 31.84	12° 35.39
ITF 005	Foggara	26° 31.88	12° 35.50
ITF 006	Foggara	26° 31.92	12° 35.61
ITF 007	Foggara	26° 31.90	12° 35.68
ITF 008	Foggara	26° 31.89	12° 35.87
ITF 009	Foggara	26° 32.02	12° 35.97
ITF 010	Cemetery	26° 32.24	12° 35.28
ITF 011	Cemetery	26° 32.18	12° 35.21
ITF 012	Cemetery	26° 31.79	12° 35.97
ITF 013	Funerary monument	26° 31.97	12° 35.83
ITF 014	Graves	26° 31.68	12° 35.13
ITF 015	Foggara	26° 31.75	12° 35.10
ITF 016	Cemetery	26° 31.26	12° 35.22
ITF 017	Foggara	26° 30.94	12° 34.87
ITF 018	Cemetery	26° 31.92	12° 36.34
ITF 019	Cemetery	26° 32.08	12° 36.13
ITF 020	Cemetery	26° 32.24	12° 36.65
ITF 021	Cemetery	26° 32.33	12° 36.85
ITF 022	Cemetery	26° 32.40	12° 37.05
ITF 023	Cemetery	26° 32.47	12° 37.34
ITF 024	Cemetery	26° 32.43	12° 37.83
ITF 025	Cemetery	26° 32.44	12° 37.96

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
ITF 026	Cemetery	26° 32.46	12° 38.44
ITF 027	Escarpment settlement	26° 31.50	12° 38.50
ITF 028	Cemetery	26° 32.00	12° 39.00
3. ad Tāmalālat			
TMT 001	Foggara group	26° 32.40	12° 39.48
TMT 002	Foggara group	26° 32.30	12° 40.32
TMT 003	Foggara group	26° 33.06	12° 42.28
TMT 004	Foggara group	26° 33.00	12° 44.34
TMT 005	Cemetery	26° 31.02	12° 43.08
TMT 006	*Qasr*?	26° 33.80	12° 43.70
4. Tinda			
TIN 001	Escarpment settlement	26° 34.05	12° 46.62
TIN 002	Wall	26° 33.91	12° 46.58
TIN 003	Cemetery	26° 33.80	12° 46.86
TIN 004	Cemetery	26° 33.70	12° 46.98
TIN 006	Cemetery	26° 33.80	12° 46.32
TIN 007	Foggara group	26° 34.18	12° 46.50
TIN 008	Cemetery	26° 34.13	12° 46.76
TIN 009	Foggara group	26° 33.50	12° 45.60
TIN 010	Cemetery	26° 33.40	12° 47.10
TIN 011	Foggara group	26° 34.00	12° 47.00
TIN 012	Foggara group	26° 33.50	12° 48.00
TIN 013	Cemetery	26° 31.50	12° 46.62
TIN 014	Cemetery	26° 33.50	12° 45.92
TIN 015	Cemetery	26° 32.80	12° 45.50
TIN 016	*Qasr*, marabout tomb	26° 34.44	12° 48.00
TIN 017	*Qasr*	26° 36.20	12° 45.90
TIN 020	Inscriptions	26° 33.76	12° 46.85
TIN 021	Mosques	26° 33.74	12° 46.76
TIN 022	Funerary monument?	26° 33.76	12° 46.73
TIN 023	Cairn	26° 33.74	12° 46.76
TIN 024	Cairns	26° 33.76	12° 46.73
TIN 025	Rock art, inscriptions	26° 33.80	12° 46.60
TIN 026	Other structures	26° 33.68	12° 46.49
TIN 027	Rock art, inscriptions	26° 33.83	12° 46.65

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
TIN 035	Lithics scatter	26° 31.98	12° 47.47
5. ad-Dīsa			
EDS 001	Cemetery	26° 31.20	12° 48.50
EDS 002	Cemetery	26° 31.20	12° 49.40
EDS 003	Cemetery	26° 30.40	12° 49.10
EDS 004	Cemetery	26° 30.90	12° 49.90
EDS 005	Cemetery	26° 31.00	12° 50.30
EDS 007	Foggara group	26° 31.80	12° 48.60
EDS 008	Foggara group	26° 31.80	12° 49.11
EDS 009	Foggara group	26° 31.80	12° 51.00
EDS 010	Settlement?	26° 32.84	12° 51.95
EDS 011	Cemetery, rock art	26° 31.75	12° 49.27
EDS 012	Antenna tombs, cairn	26° 31.74	12° 49.14
EDS 014	Lithics scatter	26° 39.23	12° 48.98
EDS 015	Lithics scatter	26° 38.34	12° 51.15
EDS 016	Lithics scatter	26° 38.15	12° 51.81
EDS 025	Grave	26° 32.10	12° 50.21
EDS 026	Cave, inscriptions	26° 31.59	12° 49.04
6. Tāqallit			
TAG 001	Cemetery, inscription	26° 32.24	12° 53.24
TAG 002	Cemetery	26° 30.50	12° 51.90
TAG 003	Cemetery	26° 31.00	12° 52.38
TAG 004	Cemetery	26° 31.70	12° 52.38
TAG 005	Cemetery	26° 31.90	12° 52.62
TAG 006	Cemetery	26° 32.55	12° 53.16
TAG 007	Cemetery	26° 32.90	12° 53.41
TAG 008	Foggara group, inscriptions	26° 32.50	12° 53.20
TAG 009	Rock art, inscriptions	26° 32.85	12° 53.58
TAG 011	*Qasr*, enclosed settlement	26° 34.39	12° 52.56
TAG 012	Cemetery (pyramid)	26° 33.80	12° 53.35
TAG 013	Cemetery	26° 32.10	12° 53.76
TAG 014	Cemetery	26° 32.50	12° 54.12
TAG 020	Enclosed settlement	26° 34.01	12° 53.31
TAG 021	Cemetery	26° 32.77	12° 53.32

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
TAG 022	Rock art, inscriptions	26° 32.99	12° 53.51
TAG 023	Rock art, inscriptions	26° 32.98	12° 53.60
TAG 024	Rock art, inscriptions	26° 32.80	12° 53.76
TAG 025	Rock art, inscriptions	26° 33.04	12° 53.59
TAG 026	Cemetery	26° 32.43	12° 52.85
TAG 027	Cemetery	26° 32.42	12° 52.84
TAG 028	Rock art, inscriptions	26° 32.80	12° 53.82
TAG 029	Lithics scatter	26° 36.84	12° 54.03
TAG 030	Lithics scatter, settlement?	26° 33.41	12° 53.21
TAG 031	Lithics scatter	26° 34.27	12° 54.00
TAG 032	Cemetery (pyramid)	26° 34.03	12° 52.45
TAG 033	Lithics scatter	26° 33.76	12° 53.99
TAG 034	Lithics scatter	26° 37.32	12° 54.02
TAG 035	Lithics scatter	26° 33.61	12° 53.99
TAG 036	Cemetery	26° 32.95	12° 53.75
TAG 037	Lithic artefact	26° 32.37	12° 54.08
TAG 038	Pottery scatter	26° 32.54	12° 53.19
TAG 040	Rock art	26° 32.99	12° 53.61
TAG 041	Rock art	26° 32.98	12° 53.64
TAG 042	Rock art	26° 33.00	12° 53.70
TAG 043	Lithics scatter, occupation?	26° 32.83	12° 4.07
7. al-Ḥaṭīya			
ELH 001	Cemetery (pyramid)	26° 33.00	12° 57.71
ELH 002	Cemetery (pyramid)	26° 33.56	12° 56.94
ELH 003	*Qasr*, settlement, enclosures	26° 32.94	12° 58.38
ELH 004	Cemetery	26° 32.80	12° 58.46
ELH 005	Settlement	26° 33.05	12° 57.80
ELH 006	*Qasr*	26° 33.11	12° 57.90
ELH 007	Cemetery (pyramid)?	26° 33.80	12° 57.08
ELH 008	Settlement, lithics scatter	26° 33.79	12° 57.10
ELH 009	*Qasr*, enclosed settlement	26° 34.20	12° 58.80
ELH 010-11	Foggara group	26° 32.40	12° 54.60
ELH 012	Foggara group	26° 32.40	12° 55.20
ELH 013	Foggara group	26° 32.00	12° 56.40
ELH 014	*Qasr*?	26° 34.50	12° 54.30
ELH 015	*Qasr*?	26° 34.80	12° 54.60
ELH 016	Cemetery	26° 30.70	12° 57.76
ELH 017	Cemetery	26° 30.30	12° 57.00
ELH 018	Rock art	26° 30.70	12° 57.74
ELH 019	Antenna tomb	26° 31.76	12° 57.74
ELH 020	Lithics scatter	26° 31.02	12° 54.26
ELH 021	Lithics scatter	26° 26.11	12° 54.86
ELH 022	Lithics scatter	26° 29.06	12° 54.89
ELH 023	Lithics scatter	26° 28.72	12° 55.65
ELH 024	Cave	26° 28.55	12° 55.63
ELH 025	Cairns, lithics scatter	26° 29.33	12° 56.23
ELH 026	Lithics scatter	26° 31.18	12° 54.21
ELH 030	Lithics scatter	26° 35.97	12° 57.16
ELH 031	Lithics scatter	26° 36.46	12° 57.16
ELH 032	Lithics scatter	26° 36.69	12° 57.03
ELH 033	Lithics scatter	26° 36.93	12° 57.32
ELH 034	Lithics scatter, occupation?	26° 36.23	12° 57.75
ELH 035	Lithics scatter	26° 36.14	12° 57.77
ELH 036	Lithics scatter, occupation?	26° 36.03	12° 57.84
ELH 037	Lithic artefact	26° 35.14	12° 58.19
8. al-Ghrayf			
LGR 001	*Qasr*?	26° 33.30	12° 59.10
LGR 002	*Qasr*?	26° 33.60	13° 00.60
LGR 003	*Qasr*, enclosure	26° 33.00	13° 00.60
LGR 004	Foggara group	26° 31.20	13° 01.20
LGR 005	Foggara group	26° 30.60	12° 59.40
LGR 006	Cemetery	26° 30.20	13° 01.32
LGR 007	Cemetery	26° 30.40	13° 00.00
LGR 008	Cemetery	26° 30.70	13° 01.38
LGR 009	Cemetery	26° 30.40	13° 01.32
LGR 010	Lithics scatter	26° 36.10	13° 02.51
LGR 011	Lithics scatter	26° 35.54	13° 02.35

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
LGR 012	Lithics scatter	26° 35.59	13° 02.42
LGR 013	Lithics scatter	26° 35.20	13° 02.25
LGR 014	Lithics scatter	26° 34.90	13° 02.26
LGR 015	Lithics scatter	26° 34.45	13° 02.14
LGR 016	Lithics scatter	26° 33.57	13° 01.90
LGR 017	Lithics scatter	26° 33.29	13° 01.89
LGR 018	Lithics scatter	26° 32.88	13° 01.79
LGR 026	Rock art, inscriptions	26° 30.70	13° 00.53
LGR 027	Cemetery	26° 30.49	13° 00.36
LGR 028	Rock art	26° 30.24	13° 00.10
LGR 029	Cemetery	26° 30.00	12° 57.89
9. Zinkekrā			
ZIN 001-3	Escarpment settlement	26° 31.19	13° 02.08
ZIN 013	Cemetery	26° 31.24	13° 01.99
ZIN 020	Cemetery	26° 31.10	13° 02.08
ZIN 109	Cemetery	26° 31.12	13° 02.13
ZIN 116	Cemetery	26° 31.28	13° 02.13
ZIN 117	Cemetery	26° 31.28	13° 02.13
ZIN 119	Cemetery	26° 31.27	13° 02.06
ZIN 173	Cemetery	26° 31.24	13° 02.04
ZIN 217-9	Cemetery	26° 31.22	13° 01.95
ZIN 220	Cemetery	26° 31.22	13° 01.95
ZIN 279	Rock art	26° 31.07	13° 02.06
ZIN 280	Cemetery	26° 31.08	13° 02.15
ZIN 281	Cemetery	26° 31.05	13° 02.09
ZIN 282	Cemetery		
ZIN 283	Cemetery		
ZIN 284	Cemetery		
ZIN 285	Cemetery	26° 31.04	13° 02.10
ZIN 286	Cemetery	26° 31.03	13° 02.11
ZIN 287	Cemetery	26° 31.02	13° 02.12
ZIN 288	Cemetery		
ZIN 289	Quarry		
ZIN 290	Cemetery	26° 31.02	13° 02.17
ZIN 291	Cemetery	26° 31.01	13° 02.17
ZIN 292	Cemetery	26° 30.98	13° 02.17
ZIN 293	Cemetery	26° 30.96	13° 02.17

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
ZIN 294	Cemetery	26° 30.94	13° 02.17
ZIN 295	Cemetery	26° 30.92	13° 02.17
ZIN 296	Cemetery	26° 30.86	13° 02.18
ZIN 330	Cemetery		
ZIN 350	Cemetery	26° 31.19	13° 01.90
ZIN 351	Cemetery	26° 31.15	13° 01.76
ZIN 352	Cemetery	26° 30.86	13° 01.55
ZIN 900.1	Wall	26° 31.16	13° 01.96
ZIN 900.2	Wall	26° 31.12	13° 01.96
ZIN 900.3	Wall	26° 31.00	13° 01.89
ZIN 900.4	Wall	26° 30.96	13° 02.01
ZIN 900.5	Wall	26° 30.94	13° 02.05
ZIN 900.6	Wall	26° 31.24	13° 01.98
ZIN 900.7	Wall		
ZIN 900.8	Wall	26° 31.08	13° 02.20
ZIN 900.9	Wall	26° 31.13	13° 02.20
ZIN 901	Lithics scatter	26° 30.90	13° 02.00
ZIN 902	Rock art, inscriptions	26° 31.19	13° 02.08
ZIN 903	Inscription	26° 31.00	13° 01.89
ZIN 904	Lithics scatter		
ZIN 905	Lithics scatter		
10. Wạtwāt			
UAT 001	Mausoleum	26° 30.81	13° 02.66
UAT 002	Cemetery	26° 30.82	13° 02.67
UAT 003	Funerary monument	26° 30.73	13° 02.71
UAT 004	Cemetery	26° 30.72	13° 02.64
UAT 005	Cemetery	26° 30.80	13° 02.44
UAT 006	Cemetery	26° 30.70	13° 02.51
UAT 007	Cemetery	26° 30.60	13° 02.40
UAT 008	Cemetery	26° 30.60	13° 02.64
UAT 009	Cemetery	26° 30.52	13° 02.59
UAT 010	Cemetery	26° 30.50	13° 02.64
UAT 011	Cemetery	26° 30.78	13° 02.40
UAT 012	Cemetery	26° 30.72	13° 02.33
UAT 013	Cemetery	26° 30.60	13° 02.23
UAT 014	Cemetery	26° 30.65	13° 02.16
UAT 015	Cemetery	26° 30.70	13° 02.10

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
UAT 016	Cemetery	26° 30.74	13° 02.17
UAT 017	Cemetery	26° 30.79	13° 02.20
UAT 018	Cemetery	26° 30.83	13° 02.17
UAT 019	Lithics scatter	26° 30.80	13° 02.28
UAT 020	Foggara group	26° 31.00	13° 02.40
UAT 021	Escarpment settlement?		
UAT 022	Inscription		
UAT 023	Quarry		
11. Jarma			
GER 001	Urban settlement, *qasr*, walls, mosques, marabout tombs	26° 32.69	13° 03.79
GER 002	Settlement	26° 32.78	13° 04.14
GER 003	[Field-walking grids]		
GER 004	*Qasr*, enclosed settlement	26° 31.70	13° 03.00
GER 005	Settlement		
GER 006	Settlement		
GER 007	Marabout tomb, cemetery	26° 31.77	13° 03.10
GER 008	Settlement?	26° 31.54	13° 03.34
GER 009	*Qasr*, settlement	26° 31.54	13° 03.34
GER 010	Settlement	26° 32.29	13° 04.34
GER 011	Cemetery	26° 32.52	13° 04.90
GER 012	Well	26° 32.67	13° 05.28
GER 013	Funerary monument	26° 32.76	13° 05.24
GER 014	*Qasr*	26° 32.46	13° 05.25
GER 015	Settlement	26° 32.46	13° 05.36
GER 016	Settlement, lithics scatter	26° 32.67	13° 05.44
GER 017	Settlement		
GER 018	Lithics scatter	32. 26° 45	13° 05.25
GER 019	*Qasr*?		
GER 020	*Qasr*?, enclosure		
GER 021	Settlement		
GER 026	Settlement? Cemetery?	26° 32.31	13° 05.21
GER 027	Settlement	26° 32.63	13° 04.73
GER 028	Settlement?	26° 32.23	13° 04.34

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
GER 030	Lithics scatter	26° 35.99	13° 04.76
GER 031	Lithics scatter, occupation	26° 36.02	13° 04.86
GER 032	Lithics scatter, occupation	26° 36.08	13° 04.79
GER 033	Lithics scatter, occupation	26° 36.03	13° 04.51
GER 034	Lithics scatter, occupation	26° 35.82	13° 04.41
GER 035	Lithics scatter, occupation	26° 35.77	13° 04.43
GER 036	Lithics scatter, occupation		
GER 037	Lithics scatter, occupation	26° 35.60	13° 04.50
GER 038	Lithics scatter, occupation	26° 35.98	13° 04.12
GER 040	Well	26° 32.78	13° 04.28
GER 041	Well	26° 32.27	13° 03.85
GER 042	Well	26° 32.36	13° 03.54
GER 043	Well	26° 32.85	13° 04.23
GER 044	Well	26° 32.69	13° 04.74
GER 045	Well	26° 32.53	13° 04.97
GER 046	Well	26° 32.60	13° 04.74
GER 047	Well	26° 32.40	13° 04.56
GER 048	Well	26° 32.54	13° 05.29
GER 049	Well	26° 32.90	13° 05.39
12. Jarma Escarpment			
GSC 001	Cemetery	26° 30.68	13° 02.88
GSC 002	Cemetery	26° 30.50	13° 02.76
GSC 003	Cemetery	26° 30.50	13° 02.88
GSC 004	Cemetery	26° 30.43	13° 03.01
GSC 005	Cemetery	26° 30.41	13° 03.43
GSC 006	Cemetery	26° 30.30	13° 03.11
GSC 007	Cemetery	26° 30.30	13° 03.12
GSC 008	Cemetery	26° 30.24	13° 03.26
GSC 009	Cemetery	26° 30.10	13° 03.18
GSC 010	Cemetery	26° 30.00	13° 03.54
GSC 011	Cemetery	26° 30.00	13° 04.26
GSC 012	Cemetery	26° 30.10	13° 04.38
GSC 013	Cemetery	26° 30.20	13° 04.44
GSC 014	Cemetery	26° 30.20	13° 04.50

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
GSC 015	Cemetery	26° 30.40	13° 04.62
GSC 016	Cemetery?	26° 30.50	13° 04.92
GSC 017	Cemetery	26° 30.50	13° 04.98
GSC 018	Cemetery	26° 30.50	13° 05.22
GSC 019	Cemetery	26° 30.70	13° 05.28
GSC 020	Cemetery	26° 30.80	13° 05.34
GSC 021	Cemetery	26° 31.00	13° 05.28
GSC 022	Cemetery, inscription	26° 31.10	13° 05.34
GSC 023	Cemetery, inscription	26° 31.15	13° 05.48
GSC 024	Cemetery	26° 31.22	13° 05.51
GSC 025	Cemetery	26° 31.24	13° 05.64
GSC 026	Cemetery	26° 31.20	13° 05.76
GSC 027	Cemetery	26° 31.30	13° 06.00
GSC 030	Cemetery	26° 30.18	13° 04.23
GSC 031	Cemetery	26° 30.16	13° 04.30
GSC 032	Foggara group	26° 31.00	13° 05.04
GSC 033	Foggara group	26° 31.30	13° 05.52
GSC 034	Quarry	26° 29.70	13° 04.20
GSC 035	Quarry	26° 30.20	13° 04.86
GSC 036	Foggara group	26° 31.70	13° 06.12
GSC 038	Cemetery	26° 31.23	13° 05.64
GSC 040	Escarpment settlement	26° 30.40	13° 04.90
GSC 041	Rock art	26° 30.32	13° 05.12
GSC 042	Cemetery	26° 30.31	13° 05.16
GSC 043	Rock art, inscription	26° 30.23	13° 05.38
GSC 044	Pottery scatter	26° 30.03	13° 05.69
GSC 045	Rock art, inscription	26° 30.29	13° 05.19
GSC 046	Cemetery	26° 30.28	13° 05.17
GSC 047	Rock art	26° 30.25	13° 05.20
GSC 048	Cemetery	26° 30.27	13° 05.37
GSC 049	Inscriptions	26° 30.36	13° 05.54
GSC 050	Rock art, inscriptions	26° 29.93	13° 04.83
GSC 051	Rock art	26° 30.05	13° 04.91
GSC 052	Lithics scatter	26° 30.14	13° 05.57
GSC 053	Lithics scatter	26° 29.80	13° 05.34
GSC 054	Lithics scatter, other structures	26° 30.60	13° 05.21
GSC 055	Lithics scatter	29.60	13° 05.32
GSC 056	Lithics scatter		
GSC 061	Grave?	26° 30.77	13° 04.63
GSC 062	Occupation	26° 31.10	13° 04.40
GSC 063	Grave?	26° 30.87	13° 04.75
GSC 064	Grave?	26° 31.17	13° 04.61
GSC 065	Settlement?	26° 32.33	13° 05.21
13. Tuwash			
TWE 001	Mausolea, cemetery (pyramid)	26° 33.01	13° 06.37
TWE 002	Cemetery	26° 32.60	13° 06.66
TWE 003	Lithics scatter	26° 32.50	13° 06.6
TWE 004	Cemetery	26° 32.40	13° 06.66
TWE 005	Cemetery	26° 32.50	13° 06.9
TWE 006	Cemetery	26° 32.30	13° 06.78
TWE 007	Cemetery	26° 32.70	13° 06.72
TWE 008	Cemetery	26° 32.71	13° 06.73
TWE 009	Cemetery	26° 32.80	13° 06.84
TWE 010	Cemetery	26° 32.80	13° 06.72
TWE 011	Cemetery	26° 32.81	13° 06.73
TWE 012	Cemetery	26° 33.00	13° 07.26
TWE 013	Cemetery	26° 33.30	13° 07.26
TWE 014	Cemetery	26° 33.50	13° 07.50
TWE 015	Cemetery	26° 33.70	13° 07.56
TWE 016	Foggara group	26° 32.60	13° 06.48
TWE 017	Enclosed settlement	26° 33.50	13° 07.20
TWE 018	Foggara group	26° 33.20	13° 07.08
TWE 021	Escarpment settlement	26° 32.60	13° 06.84
TWE 022	Cave, inscriptions	26° 32.60	13° 06.90
TWE 023	Field systems?	26° 33.30	13° 05.16
TWE 024	Rock art, inscription	26° 32.05	13° 06.47
TWE 025	Well	26° 32.75	13° 05.99
TWE 026	*Qasr*	26° 32.80	13° 06.00
TWE 027	Settlement?	26° 32.78	13° 06.01

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
TWE 028	Settlement, industrial site	26° 32.82	13° 05.82
TWE 029	Settlement, industrial site	26° 33.12	13° 05.47
TWE 033	Rock art, inscription	26° 32.23	13° 06.63
TWE 034	Rock art	26° 32.60	13° 06.78
TWE 035	Lithics scatter	26° 32.06	13° 06.47
TWE 036	Lithics scatter	26° 32.07	13° 06.47
TWE 038	Well	26° 32.65	13° 06.05
TWE 039	Well	26° 32.64	13° 06.16
TWE 041	Rock art	26° 32.03	13° 06.42
TWE 042	Lithics scatter	26° 35.85	13° 07.70
TWE 043	Lithics scatter	26° 35.89	13° 06.48
TWE 044	Antenna Tomb	26° 31.91	13° 06.37
TWE 045	Cemetery	26° 30.18	13° 06.42
14. al-Fugār			
FUG 001	Mausoleum, marabout tomb, cemetery	26° 33.90	13° 07.86
FUG 002	Cemetery	26° 33.70	13° 07.86
FUG 003	Cemetery	26° 33.80	13° 08.40
FUG 004	Cemetery	26° 33.70	13° 08.40
FUG 005	Cemetery		
FUG 006	Cemetery	26° 33.80	13° 08.04
FUG 007	Cemetery	26° 33.80	13° 08.22
FUG 008	Cemetery	26° 33.70	13° 08.28
FUG 009	Cemetery	26° 33.70	13° 08.34
FUG 010	Cemetery	26° 33.70	13° 08.52
FUG 011	Cemetery	26° 33.50	13° 08.58
FUG 012	Cemetery	26° 33.40	13° 08.52
FUG 013	Cemetery	26° 32.80	13° 09.06
FUG 014	Cemetery, inscription	26° 32.70	13° 09.24
FUG 015	Cemetery	26° 32.60	13° 09.48
FUG 016	Wall	26° 33.80	13° 07.80
FUG 017	Foggara group	26° 33.40	13° 09.00
FUG 018	Rock art, inscriptions	26° 33.68	13° 08.72
FUG 019	Rock art, marabout tomb	26° 33.65	13° 08.69
FUG 020	Rock art	26° 33.72	13° 08.62
FUG 021	Rock art, inscription	26° 33.72	13° 08.59
FUG 022	*Qasr*, settlement	26° 33.80	13° 09.76
FUG 023	Mosque	26° 33.80	13° 09.80
FUG 025	Lithics scatter	26° 36.20	13° 09.90
15. al-Khara'iq			
CHA 001	Cemetery (pyramid)	26° 33.42	13° 11.60
CHA 002	Cemetery, inscription	26° 33.40	13° 11.60
CHA 003	Enclosure	26° 33.10	13° 11.40
CHA 004-7	Escarpment settlement	26° 33.20	13° 11.30
CHA 008	Occupation, cemetery?	26° 33.10	13° 11.40
CHA 009	Foggara group	26° 33.20	13° 11.70
CHA 010	Foggara group	26° 32.90	13° 11.94
CHA 011	Foggara group	26° 32.90	13° 10.26
CHA 012	Cemetery	26° 32.70	13° 10.26
CHA 023	*Qasr*	26° 33.90	13° 11.72
CHA 024	Industrial site	26° 33.92	13° 11.77
CHA 025	Marabout tomb	26° 33.61	13° 11.70
CHA 026	Settlement	26° 33.79	13° 11.98
CHA 027	Settlement	26° 33.84	13° 11.92
CHA 030	Settlement	26° 33.73	13° 11.27
CHA 031	Foggara	26° 33.47	13° 11.52
16. Qarāqra			
GRA 001	Cemetery	26° 32.60	13° 12.50
GRA 002	Settlement	26° 33.06	13° 13.10
GRA 003	Foggara group	26° 32.90	13° 12.60
GRA 004	Cemetery	26° 33.20	13° 13.26
GRA 005	Foggara group	26° 33.30	13° 13.14
17. Takarkība			
TEK 001	Cemetery	26° 33.50	13° 14.64
TEK 002	Cemetery	26° 33.40	13° 14.52
TEK 003	Cemetery	26° 33.40	13° 14.16
TEK 004	Cemetery	26° 33.40	13° 15.12
TEK 005	Cemetery	26° 33.40	13° 15.18
TEK 006	Cemetery	26° 33.80	13° 15.30
TEK 007	Cemetery	26° 33.40	13° 15.42
TEK 008	Wall	26° 33.40	13° 14.88

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
TEK 009	Foggara group	26° 33.20	13° 15.54
TEK 010	*Qasr*, settlement, mosque, cemetery	26° 33.33	13° 15.86
TEK 011	Settlement	26° 33.80	13° 14.70
TEK 012	Foggara group	26° 33.30	13° 13.92
TEK 013	Cemetery	26° 33.20	13° 13.98
TEK 014	Foggara group	26° 33.50	13° 14.46
TEK 015	Lithics scatter	26° 33.50	13° 15.54
TEK 016	Lithics scatter	26° 33.95	13° 15.48
TEK 017	Cemetery? lithics scatter	26° 33.41	13° 15.37
18. Fjayj			
FJJ 001	Settlement	26° 31.98	13° 17.06
FJJ 002	Cemetery	26° 32.21	13° 17.76
FJJ 003	Cemetery	26° 31.46	13° 18.15
FJJ 004	Cemetery	26° 31.64	13° 18.24
FJJ 005	Cemetery	26° 31.70	13° 18.50
FJJ 006	Cemetery	26° 31.66	13° 18.42
FJJ 007	Cemetery	26° 31.96	13° 18.74
FJJ 008	Occupation? Settlement?	26° 32.20	13° 18.80
FJJ 009	Cemetery	26° 32.30	13° 18.80
FJJ 010	Cemetery		
FJJ 011	Settlement, cemetery		
FJJ 012	Rock art	26° 32.25	13° 18.73
FJJ 013	*Qasr*	26° 32.38	13° 17.58
FJJ 014	*Qasr*	26° 32.77	13° 19.28
FJJ 015	Foggara group	26° 32.10	13° 16.10
FJJ 016	Foggara group	26° 32.30	13° 17.00
FJJ 017	Foggara group	26° 32.20	13° 17.80
FJJ 018	Foggara group	26° 32.40	13° 19.10
FJJ 019	Foggara	26° 32.70	13° 19.40
FJJ 020	*Qasr*, settlement	26° 32.60	13° 17.65
FJJ 021	Lithics scatter	26° 31.29	13° 17.83
FJJ 022	Rock art	26° 32.08	13° 19.31
FJJ 023	Rock art	26° 32.02	13° 19.29
FJJ 024	Rock art	26° 31.88	13° 19.32
FJJ 025	Rock art, cave	26° 31.75	13° 19.41
FJJ 026	Rock art	26° 31.71	13° 19.22

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
FJJ 027	Rock art, inscriptions	26° 31.56	13° 19.61
FJJ 028	Rock art, inscriptions	26° 31.52	13° 19.65
FJJ 029	Rock art	26° 31.70	13° 19.44
FJJ 030	Lithics scatter	26° 31.21	13° 17.69
FJJ 031	Lithics scatter	26° 30.71	13° 17.41
FJJ 032	Lithics scatter	26° 30.72	13° 16.59
FJJ 033	Lithics scatter	26° 30.62	13° 16.53
FJJ 034	Lithics scatter	26° 30.63	13° 16.50
FJJ 035	Lithics scatter	26° 30.61	13° 16.45
FJJ 036	Lithics scatter	26° 30.53	13° 16.57
FJJ 037	Lithics scatter	26° 30.35	13° 16.60
FJJ 038	Lithics scatter	26° 30.53	13° 16.82
FJJ 039	Lithics scatter, occupation	26° 33.21	13° 19.98
FJJ 040	Lithics scatter	26° 33.12	13° 19.34
FJJ 041	Lithics scatter, other structures	26° 33.11	13° 19.28
FJJ 042	Lithics scatter	26° 33.07	13° 19.28
FJJ 043	Lithics scatter, occupation?	26° 33.15	13° 18.57
FJJ 044	Lithics scatter, occupation?	26° 33.19	13° 18.15
FJJ 045	Lithics scatter, occupation?	26° 33.16	13° 18.00
FJJ 046	Marabout	26° 33.12	13° 17.78
FJJ 049	Lithics scatter, occupation?	26° 30.93	13° 15.57
FJJ 050	Lithics scatter	26° 29.32	13° 15.34
FJJ 051	Lithics scatter	26° 27.24	13° 17.87
FJJ 052	Lithics scatter	26° 27.25	13° 18.07
FJJ 053	Lithics scatter	26° 26.93	13° 20.45
FJJ 054	Lithics scatter	26° 26.93	13° 21.44
FJJ 056	*Qasr*, settlement, enclosures	26° 32.16	13° 17.99
19. Lārkū			
LAR 001	*Qasr*	26° 32.40	13° 21.81
LAR 002	Cemetery	26° 31.30	13° 21.40
LAR 003	Cemetery	26° 31.36	13° 21.83
LAR 004	Cemetery	26° 31.40	13° 22.40
LAR 005	Foggara	26° 32.00	13° 21.50
LAR 006	Foggara	26° 32.00	13° 21.90

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
LAR 007	Foggara	26° 32.10	13° 22.70
LAR 008	Cemetery	26° 31.20	13° 23.20
LAR 009	Field system, enclosures	26° 32.70	13° 22.00
LAR 010	Cemetery	26° 31.24	13° 21.71
LAR 011	*Qasr*, enclosed settlement	26° 33.10	13° 22.40
LAR 012	Lithics scatter	26° 31.10	13° 21.58
LAR 013	Lithics scatter	26° 31.21	13° 21.83
LAR014	Well	26° 32.30	13° 21.70
20. al-Qrāya			
GRE 001	Cemetery	26° 34.10	13° 26.30
GRE 002	Cemetery	26° 34.20	13° 26.50
GRE 003	Cemetery	26° 33.80	13° 26.30
GRE 004	Cemetery	26° 33.60	13° 26.30
GRE 005	Cemetery?	26° 33.70	13° 26.60
GRE 006	Cemetery	26° 33.50	13° 26.50
GRE 007	Cemetery	26° 33.30	13° 26.30
GRE 008	Cemetery	26° 33.10	13° 26.20
GRE 009	Cemetery	26° 33.00	13° 25.90
GRE 010	Cemetery	26° 31.90	13° 25.30
GRE 011	Cemetery	26° 31.70	13° 25.10
GRE 012	Cemetery	26° 31.60	13° 24.90
GRE 013	Cemetery	26° 32.60	13° 26.00
GRE 014	Cemetery	26° 32.50	13° 20.50
GRE 015	*Qasr*	26° 32.74	13° 23.38
GRE 016	*Qasr*	26° 33.70	13° 23.80
GRE 017	Foggara group	26° 32.60	13° 23.60
GRE 018	Foggara group	26° 33.10	13° 24.70
GRE 019	Foggara group	26° 33.90	13° 25.40
GRE 020	*Qasr*?	26° 34.70	13° 24.80
GRE021	Escarpment settlement?	26° 33.80	13° 26.40
GRE022	Cemetery	26° 32.80	13° 25.80
21. al-Qṣīr			
LEK 001-2	Escarpment settlement	26° 35.30	13° 27.30
LEK 003	Cemetery	26° 35.40	13° 27.20
LEK 004	Cemetery, mosque, other structures	26° 35.50	13° 27.40

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
LEK 005	Cemetery	26° 35.50	13° 27.30
LEK 006	Cemetery	26° 34.90	13° 26.80
LEK 007	Cemetery	26° 34.90	13° 26.60
LEK 008	Cemetery	26° 35.30	13° 27.40
LEK 009	Cemetery	26° 34.85	13° 29.24
LEK 010	Cemetery	26° 35.00	13° 28.70
LEK 011	Cemetery	26° 35.00	13° 28.40
LEK 012	Cemetery	26° 34.60	13° 26.60
LEK 013	Cemetery	26° 34.70	13° 26.60
LEK 014	Foggara group	26° 34.70	13° 26.40
LEK 015	Foggara group	26° 35.20	13° 26.90
LEK 016	Foggara group	26° 35.40	13° 27.70
LEK 017	*Qasr*	26° 35.76	13° 29.24
LEK 018	*Qasr*, settlement, mosque, well	26° 35.55	13° 27.97
LEK 019	*Qasr*	26° 35.60	13° 28.20
LEK 020	Foggara group	26° 35.20	13° 28.90
LEK 021	*Qasr*, settlement	26° 35.93	13° 29.87
LEK 022	*Qasr*, settlement	26° 35.67	13° 27.88
LEK 023	Cemetery	26° 35.00	13° 27.10
22. ar-Raqayba			
RUG 001	Cemetery	26° 37.04	13° 36.47
RUG 002	Cemetery	26° 37.10	13° 36.20
RUG 003	Cemetery	26° 37.30	13° 37.50
RUG 004	Cemetery	26° 37.30	13° 36.50
RUG 005	Cemetery	26° 36.90	13° 36.20
RUG 006	Cemetery	26° 36.60	13° 32.00
RUG 007	Lithics scatter	26° 37.30	13° 37.40
RUG 008	Rock art, inscription	26° 37.30	13° 36.50
RUG 010	Cemetery	26° 37.30	13° 36.90
RUG 011	Cemetery	26° 36.70	13° 36.20
RUG 012	Cemetery	26° 37.50	13° 37.80
RUG 013	Cemetery	26° 37.40	13° 38.08
RUG 014	*Qasr*	26° 39.00	13° 37.60
RUG 015	*Qasr*?	26° 38.10	13° 36.40
RUG 016	*Qasr*	26° 37.31	13° 35.61
RUG 017	Foggara group	26° 36.60	13° 34.20
RUG 018	Foggara group	26° 37.40	13° 36.20

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
RUG 019	Foggara group	26° 37.60	13° 36.80
RUG 020	Foggara group	26° 37.40	13° 37.40
RUG 021	Cemetery	26° 37.35	13° 38.01
RUG 022	Cemetery	26° 37.33	13° 37.97
RUG 023	*Qasr*	26° 37.80	13° 36.28
RUG 024	*Qasr*	26° 37.90	13° 36.75
RUG 026	*Qasr*?	26° 38.10	13° 35.60
23. Bintbaya			
BBA 001	Cemetery	26° 38.90	13° 39.40
BBA 002	Cemetery	26° 38.80	13° 39.30
BBA 003	Cemetery	26° 40.00	13° 39.00
BBA 004	Lithics scatter	26° 38.80	13° 39.20
BBA 005	Settlement	26° 39.00	13° 39.30
BBA 006	Cemetery	26° 38.80	13° 39.60
BBA 007	Cemetery	26° 38.20	13° 38.60
BBA 008	Foggara group	26° 38.60	13° 38.90
BBA 009	Foggara	26° 38.60	13° 39.40
BBA 010	Foggara	26° 39.00	13° 39.70
BBA 011	*Qasr*?		
BBA 012	*Qasr*?		
BBA 013	*Qasr*? enclosure	26° 39.10	13° 38.91
BBA 014	Cemetery?	26° 38.98	13° 38.90
BBA 015	Escarpment settlement	26° 39.00	13° 38.84
24. al-Zūwīya			
ZOU 001	Cemetery	26° 39.84	13° 43.17
ZOU 002	Cemetery	26° 39.98	13° 43.80
ZOU 003	Cemetery	26° 39.30	13° 43.30
ZOU 004	Cemetery	26° 38.90	13° 42.50
ZOU 005	Cemetery	26° 38.80	13° 41.90
ZOU 006	Cemetery	26° 38.94	13° 41.06
ZOU 007	Cemetery	26° 38.97	13° 40.86
ZOU 008	Cemetery	26° 38.80	13° 40.30
ZOU 009	Cemetery	26° 38.80	13° 40.20
ZOU 010	Cemetery	26° 38.90	13° 40.50
ZOU 011	Cemetery	26° 38.80	13° 40.00
ZOU 012	Cemetery	26° 38.80	13° 41.60
ZOU 013	Cemetery	26° 38.90	13° 42.50
ZOU 014	Cemetery	26° 39.50	13° 43.80

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
ZOU 015	*Qasr*, enclosed settlement	26° 40.19	13° 43.42
ZOU 016	Cemetery?	26° 40.10	13° 43.30
ZOU 017	Foggara group	26° 39.10	13° 40.30
ZOU 018	Foggara group	26° 39.20	13° 41.50
ZOU 019	Foggara group	26° 39.10	13° 43.10
ZOU 020	Foggara group	26° 40.00	13° 43.50
ZOU 022	Cemetery	26° 39.88	13° 43.65
ZOU 023	Cemetery	26° 39.98	13° 43.73
ZOU 024	Cemetery	26° 40.04	13° 43.95
ZOU 025	Cemetery	26° 40.17	13° 43.98
ZOU 026	Lithics scatter	26° 40.02	13° 43.84
25. Qaṣr Bin Dughba			
GBD 001	Urban settlement?, enclosed settlement, *qasr*	26° 41.30	13° 43.81
GBD 002	*Qasr*	26° 39.46	13° 42.13
GBD 003	Settlement	26° 40.30	13° 41.80
GBD 004	Cemetery	26° 41.30	13° 43.80
GBD 005	*Qasr*	26° 40.70	13° 42.00
GBD 006	*Qasr*	26° 40.50	13° 41.20
GBD 007	*Qasr*	26° 39.57	13° 40.30
GBD 008	*Qasr*	26° 39.74	13° 40.78
GBD 009	*Qasr*	26° 39.96	13° 42.42
GBD 010	*Qasr*	26° 39.75	13° 42.66
GBD 019	*Qasr*	26° 39.47	13° 42.11
GBD 021	Lithics scatter	26° 41.90	13° 43.13
GBD 022	Lithics scatter	26° 41.91	13° 43.20
GBD 023	Lithics scatter	26° 41.96	13° 43.42
GBD 024	Pottery scatter, occupation?	26° 41.96	13° 43.46
26. al-Qal'at			
GEL 001	Rock art, inscriptions	26° 41.14	13° 46.13
GEL 002	Enclosed settlement	26° 41.88	13° 45.68
GEL 003	Settlement	26° 41.66	13° 45.60
GEL 004	*Qasr*, enclosed settlement	26° 42.29	13° 47.25
GEL 005	Enclosed settlement	26° 41.64	13° 43.80
GEL 006	Cemetery	26° 41.58	13° 45.58

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
GEL 007	Settlement? Occupation?	26° 41.20	13° 46.10
GEL 008	Cemetery	26° 41.50	13° 46.60
GEL 009	Cemetery	26° 41.50	13° 47.00
GEL 010	Cemetery	26° 41.70	13° 45.60
GEL 011	*Qasr*, enclosed settlement	26° 42.10	13° 47.76
GEL 012	*Qasr*	26° 41.60	13° 43.70
GEL 013	*Qasr*	26° 41.48	13° 43.89
GEL 014	Foggara group	26° 40.70	13° 45.50
GEL 015	Foggara group	26° 41.50	13° 46.80
GEL 016	Foggara group	26° 41.30	13° 47.90
GEL 017	Cemetery	26° 40.90	13° 46.70
GEL 018	Cemetery	26° 40.90	13° 47.20
GEL 019	Cemetery	26° 40.90	13° 47.70
GEL 020	Cemetery	26° 41.00	13° 48.10
GEL 021	Cemetery	26° 41.40	13° 48.40
GEL 022	Cemetery	26° 41.50	13° 49.20
GEL 023	Cemetery	26° 41.40	13° 46.10
GEL 024	Cemetery	26° 41.20	13° 46.30
GEL 025	Foggara group	26° 41.60	13° 48.70
GEL 026	*Qasr*, enclosure	26° 42.16	13° 48.46
GEL 027	Cemetery	26° 41.36	13° 48.89
GEL 028	Cemetery	26° 42.20	13° 45.10
GEL 029	Enclosed settlement	26° 42.10	13° 47.10
GEL 030	Cemetery	26° 44.80	13° 45.00
GEL 031	Cemetery	26° 41.60	13° 43.84
27. Ikhlif			
CLF 001-2	Escarpment settlement, enclosure	26° 42.60	13° 52.80
CLF 003	Cemetery	26° 43.70	13° 53.27
CLF 004	Cemetery	26° 43.80	13° 53.10
CLF 005	Cemetery	26° 43.40	13° 53.10
CLF 006	Cemetery	26° 42.60	13° 53.30
CLF 007	Cemetery	26° 43.40	13° 53.50
CLF 008-10	Escarpment settlement, cemetery, wall	26° 41.92	13° 49.90
CLF 011	Foggara group	26° 42.00	13° 49.30
CLF 012	Cemetery	26° 42.10	13° 49.90

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
CLF 013	Cemetery	26° 42.10	13° 50.00
CLF 014	Cemetery	26° 42.20	13° 50.30
CLF 015	Foggara group	26° 42.30	13° 50.40
CLF 016	Cemetery	26° 42.40	13° 50.80
CLF 018	Foggara group	26° 42.50	13° 51.40
CLF 019	Cemetery	26° 42.20	13° 51.50
CLF 020	Foggara group	26° 42.40	13° 52.40
CLF 021	Cemetery	26° 42.00	13° 52.80
CLF 022	Foggara group	26° 42.90	13° 53.70
CLF 023	Foggara group	26° 43.00	13° 54.30
CLF 024	Cemetery	26° 42.60	13° 54.10
CLF 025	Cemetery	26° 42.00	13° 49.90
CLF 026	*Qasr*, settlement?	26° 42.00	13° 50.96
CLF 027	Cemetery	26° 42.24	13° 50.84
CLF 028	Cemetery	26° 42.27	13° 50.99
CLF 029	Lithics scatter	26° 41.90	13° 50.00
CLF 030	Lithics scatter	26° 41.90	13° 50.30
CLF 031	*Qasr*?	26° 42.40	13° 49.00
28. Bin Ḥārith			
BNH 001	Cemetery	26° 42.70	13° 54.70
BNH 002	Cemetery	26° 43.50	13° 55.60
BNH 003	Cemetery?	26° 44.26	13° 56.28
BNH 004	Cemetery?	26° 44.50	13° 56.90
BNH 005	*Qasr*, enclosed settlement	26° 44.54	13° 56.66
BNH 006	Foggara group	26° 44.70	13° 57.50
BNH 007	Foggara group	26° 44.90	13° 56.70
BNH 008	Foggara group	26° 44.50	13° 56.30
BNH 009	Foggara group	26° 44.00	13° 55.60
BNH 010	Foggara group	26° 43.40	13° 55.00
BNH 011	Antenna tomb	26° 42.67	13° 54.41
BNH 012	*Qasr*	26° 44.01	13° 55.04
BNH 013	Cemetery	26° 44.62	13° 57.07
BNH 014	Antenna tomb	26° 44.51	13° 57.17
BNH 015	Cemetery	26° 44.27	13° 56.61
BNH 016	Cemetery	26° 44.26	13° 56.41
BNH 017	*Qasr*	26° 44.94	13° 56.57
BNH 018	Cemetery	26° 44.53	13° 56.69

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
BNH 019	Rock art	26° 44.56	13° 56.68
BNH 020	*Qasr*?	26° 44.50	13° 55.40
29. al-Abyaḍ			
ABD 001	Foggara	26° 44.90	13° 58.90
ABD 002	Cemetery	26° 45.20	14° 00.00
ABD 003	*Qasr*? Enclosure?	26° 45.30	13° 58.70
ABD 004	Cemetery	26° 45.40	13° 59.80
ABD 005	Cemetery	26° 45.40	14° 00.56
ABD 006	Cemetery	26° 44.90	13° 59.80
30. Bi'r Baqqārā			
BBG 001	Cemetery		
BBG 002	Cemetery		
BBG 003	Cemetery		
BBG 004	Occupation?		
BBG 005	Occupation?		
BBG 006	*Qasr*		
BBG 007	Antenna tomb	26° 03.73	12° 58.36
BBG 008	Occupation	25° 55.45	13° 10.58
BBG 009	Cairn	25° 56.79	13° 12.38
BBG 010	Antenna tomb	25° 56.42	13° 12.88
BBG 011	Occupation	25° 30.93	13° 19.72
BBG 012	Cemetery	25° 48.59	13° 16.55
BBG 013	Lithics scatter	25° 56.64	13° 07.95
BBG 014	Lithics scatter	25° 47.96	13° 16.16
31. Qaṣr Māra			
MAR 001	*Qasr*, settlement, enclosures	26° 01.53	13° 22.42
MAR 002	Cemetery		
MAR 003	Cemetery		
MAR 004	Cemetery		
MAR 005	Cemetery		
MAR 006	Cemetery		
MAR 007	Cemetery		
MAR 008	Cemetery		
MAR 009	Lithics scatter, occupation		
MAR 010	Lithics scatter, occupation		
MAR 011	Foggara group		
MAR 012	Cemetery		
32. Qaṣr ash-Sharrāba			
SCH 001	Cemetery		
SCH 002	Cemetery		
SCH 003	Cemetery		
SCH 004	Cemetery		
SCH 005	Cemetery		
SCH 006	Cemetery		
SCH 007	Cemetery		
SCH 008	Cemetery		
SCH 009	Cemetery		
SCH 010	Cemetery		
SCH 011	Cemetery		
SCH 012	Cemetery		
SCH 013	Cemetery		
SCH 014	Cemetery		
SCH 015	Cemetery		
SCH 016	Cemetery		
SCH 017	Cemetery		
SCH 018	Cemetery		
SCH 019	Occupation		
SCH 020	Urban settlement, *qsur*, enclosures	25° 58.71	13° 17.25
SCH 021	Occupation		
SCH 022	Cemetery	25° 57.62	13° 17.52
SCH 023	Settlement	25° 57.69	13° 17.78
SCH 024	Cairn	25° 57.49	13° 17.29
SCH 025	*Qasr*		
SCH 026	*Qasr*		
SCH 027	Cemetery		
SCH 028	Foggara group		
SCH 029	Lithics scatter		
33. Ghuddwa			
GDD 001	Cemetery		
GDD 002	Cemetery		
GDD 003	Cemetery		
GDD 004	Cemetery		
GDD 005	*Qasr*		

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
GDD 006	*Qasr*		
GDD 007	*Qasr*		
GDD 008	*Qasr*		
GDD 009	*Qasr*, enclosures		
GDD 010	Foggara group		
GDD 011	Funerary monument?		
GDD 012	*Qasr*		
34. Wādī an-Nashw'a			
NSH 001	Cemetery		
NSH 002	Cemetery		
NSH 003	Cemetery		
NSH 004	Cemetery		
NSH 005	Cemetery		
NSH 006	*Qasr*, enclosure		
NSH 007	*Qasr*		
NSH 008	Cemetery		
NSH 009	*Qasr*		
NSH 010	Cemetery		
NSH 011	*Qasr*, enclosure		
NSH 012	*Qasr*		
NSH 013	*Qasr*, enclosure		
NSH 014	Enclosure		
NSH 015	Cemetery		
NSH 016	*Qasr*		
NSH 017	*Qasr*		
NSH 018	*Qasr*, enclosures		
NSH 019	*Qasr*		
NSH 020	Cemetery		
NSH 021	Enclosed settlement		
NSH 022	Cemetery		
NSH 023	Cemetery		
NSH 024	Cemetery		
NSH 025	Cemetery		
NSH 026	Cemetery		
NSH 027	Cemetery		
NSH 028	Cemetery		
NSH 029	Cemetery		
NSH 030	Foggara group		
NSH 031	Cemetery		
NSH 032	Cemetery		
NSH 033	Cemetery		
35. Wādī 'Utba			
UTB 001	*Qasr*, enclosures		
UTB 002	*Qasr*		
UTB 003	Foggara group		
UTB 004	*Qasr*		
UTB 005	*Qasr*?		
UTB 006	*Qasr*, enclosure		
UTB 007	Cemetery?		
UTB 008	*Qasr*, enclosure		
UTB 009	*Qasr*		
UTB 010	*Qasr*, enclosure		
UTB 011	*Qasr*, enclosure		
UTB 012	*Qasr*?, enclosure		
UTB 013	*Qasr*, enclosure		
UTB 014	*Qasr*, enclosure		
UTB 015	Enclosed settlement		
UTB 016	*Qasr*		
UTB 017	*Qasr*		
UTB 018	*Qasr*, enclosure		
UTB 019	Cemetery		
UTB 020	Cemetery		
UTB 021	Cemetery		
UTB 022	Cemetery		
UTB 023	*Qasr*?		
UTB 024	Cemetery		
UTB 025	Cemetery		
UTB 026	Cemetery		
UTB 027	*Qasr*		
UTB 028	*Qasr*?, enclosure		
UTB 029	*Qasr*?, enclosure		
UTB 030	*Qasr*?		
36. Murzuq			
MZQ 001	Urban settlement, *qasr*, wall, mosques, cemeteries	25° 55.25	13° 54.65

Area & Site Code	Site Type	N Deg/Min	E Deg/Min
MZQ 002	*Qasr*		
MZQ 003	*Qasr*		
MZQ 004	*Qasr*, enclosure, field system		
MZQ 005	*Qasr*?		
MZQ 006	*Qasr*?		
MZQ 007	*Qasr*, enclosure		
MZQ 008	*Qasr*, settlement	25° 55.30	13° 54.65
37. Zuwīla			
ZUL 001	Urban settlement, *qasr*, wall	26° 10.09	15° 07.71
ZUL 002	Mosque	26° 09.92	15° 07.51
ZUL 003	Cemetery, funerary monuments	26° 09.96	15° 08.68
ZUL 004	*Qasr*, enclosure		
ZUL 005	Cemetery		
ZUL 006	Cemetery	26° 09.51	15° 07.59
ZUL 007	Field system	26° 09.81	15° 08.26
ZUL 008	Cemetery	26° 09.71	15° 07.47
ZUL 009	Cemetery	26° 09.57	15° 07.36
ZUL 010	*Qasr*, settlement, well	26° 10.52	15° 07.13
ZUL 011	Foggara group	26° 10.10	14° 58.00
38. Wādī ash-Shātī (Wādī Dabdab area)			
DBD 001	Cemetery		
DBD 002	Settlement		
DBD 003	Foggara group		
DBD 004	Rock art		
39. Dahān Ubārī			
EDU 001	Lithics scatter, occupation?	26° 42.51	13° 19.19
EDU 002	Lithics scatter	26° 38.38	11° 56.77
EDU 003	Lithics scatter	26° 37.24	11° 53.35
EDU 004	Lithics scatter	26° 42.62	12° 54.07
EDU 005	Lithics scatter, occupation	26° 42.49	12° 54.15
EDU 006	Lithics scatter	26° 42.79	12° 54.07
EDU 007	Lithics scatter	26° 42.85	12° 54.12
EDU 008	Lithics scatter	26° 42.96	12° 54.15
EDU 009	Lithics scatter	26° 42.87	12° 54.09
EDU 011	Lithic artefact	26° 42.61	12° 54.24
EDU 014	Settlement	26° 41.64	13° 18.82
EDU 015	Lithics scatter	26° 39.36	12° 42.25
EDU 016	Lithics scatter	26° 45.01	12° 25.66
EDU 017	Lithics scatter	26° 45.00	12° 25.66
EDU 018	Lithics scatter	26° 44.98	12° 25.59
EDU 019	Lithics scatter	26° 45.15	12° 24.93
EDU 020	Lithics scatter	26° 40.46	12° 42.62
EDU 021	Lithics scatter	26° 40.00	13° 03.78
EDU 022	Lithics scatter	26° 39.93	13° 03.76
EDU 023	Lithics scatter	26° 40.83	12° 50.68
EDU 024	Lithics scatter	26° 37.23	12° 07.05
EDU 027	Lithics scatter	26° 19.55	12° 16.49
EDU 028	Lithics scatter, antenna tomb	26° 44.14	12° 22.52
EDU 029	Pottery scatter	26° 14.32	11° 25.15
EDU 030	Cemetery	26°47.17	12°03.27

In general, authorship of entries in the Gazetteer is as follows:

a) sites recorded only by CMD were drafted by David Edwards from notes written by CMD, with further editorial input from David Mattingly;
b) sites recorded by both CMD and FP were jointly authored by David Edwards and David Mattingly;
c) many sites only recorded by FP were authored by David Mattingly, with input from a number of main contributors (d-h below) and minor assistance from Nick Brooks, Nick Drake, Sophie Hay, Sue Mclaren, Jamie Preston, Irene Schrüfer-Kolb, Kevin White;
d) notes on foggaras derive mainly from FP work by Andrew Wilson;
e) notes on rock art derive from FP work by Tertia Barnett;
f) notes on FP fieldwalked sites are based on the work of Phil Balcombe;
g) comments on CMD and FP pottery are based on identifications made by Anna Leone and John Dore (with some additional information from the CMD archive);
h) comments on lithics are due to Tim Reynolds;
i) the maps illustrating each section were produced by Paul Newson under the supervision of David Mattingly, working with overlays prepared by David Edwards;
j) final editing, the addition of references and selection of figures, writing of Section 0 and introductory text for each section, and production of summary tables was by David Mattingly, with some inputs from David Edwards.

Abbreviations

Note the following common abbreviations used in the Gazetteer.
ARS, RS, TRS, BR = African Red Slip ware, undifferentiated Red Slip ware, Tripolitanian Red Slip ware, Berber Red ware
APs = Air photographs
E, S, W, N (etc.) = east, south, west, north etc.

a) Wādī Irāwan and Western Wādī al-Ajāl (al-Wādī al-Gharbī)

SECTION 1. TIN ABŪNDĀ [TIN ABUNDA] (TAB)

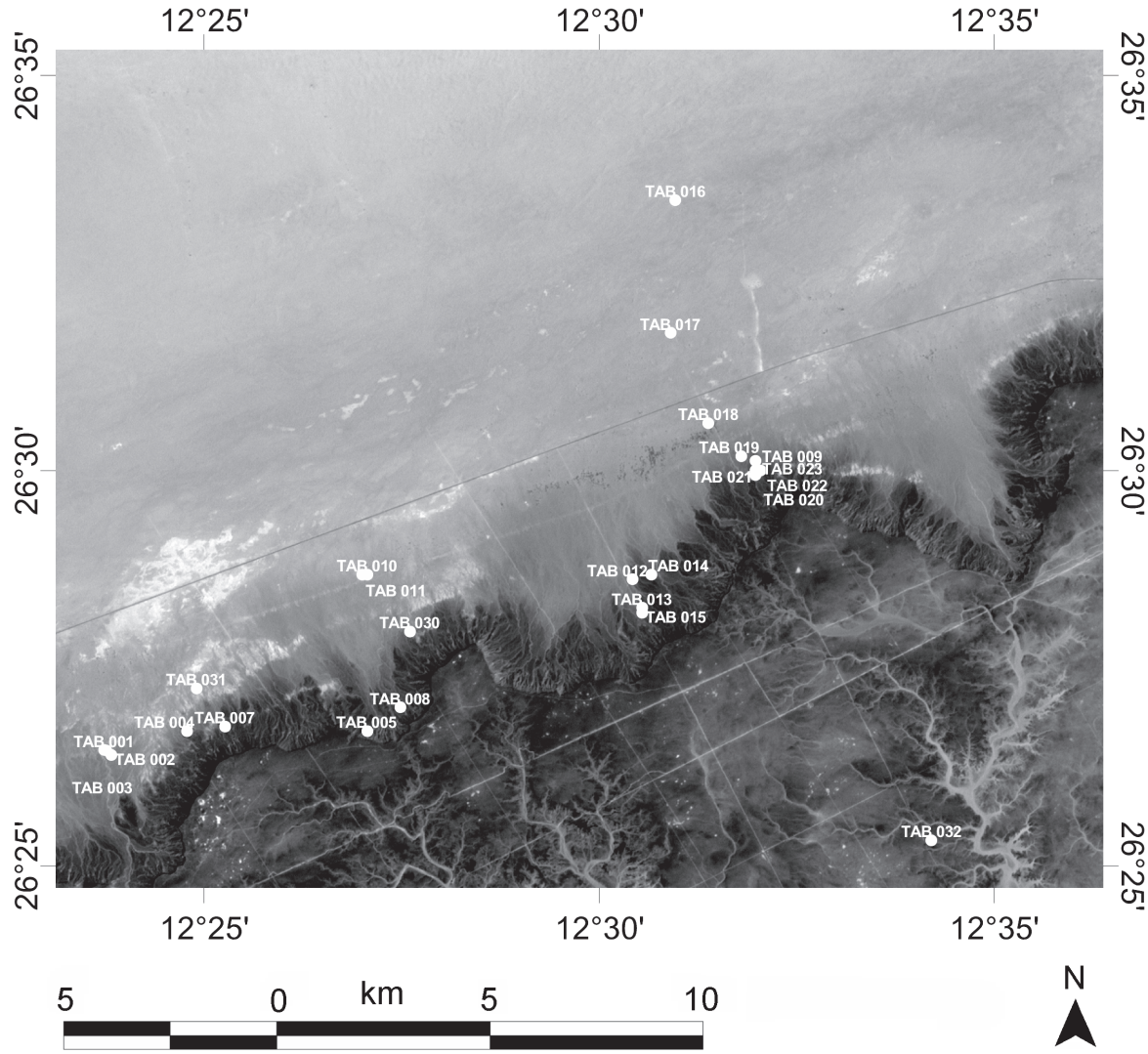


Figure 1.1. Sites in the Tin Abūndā area (FP 2000).

The well of Tin Abūndā lies *c.*45km SW of Ubārī along the old caravan route to Ghat in the Wādī Irāwan, a broad plain that continues the line of the al-Ajāl depression to the W (Bruce-Lockhart and Wright 2000, 123-4; Richardson 1848, i, 290-91). It is one of the last major sweet water wells before a lengthy stretch of desert steppe towards Sardalas/al-'Uwaynāt *c.*200km to the W. There was no permanent settlement and no farming around the well in the early 20th century (Scarin 1937b). The existence of 'Garamantian' tombs here has been known since the Italian expedition in the 1930s (Caputo 1937, 314; Pace *et al.* 1951, 384-86) and Daniels may have paid a brief visit. The Italians excavated several burials here, including an antenna tomb (no finds) and a cairn, which yielded iron artefacts (Pace *et al.* 1951, 384-86). Tin Abūndā appears to mark the W limit of the escarpment cemeteries of the Wādī al-Ajāl/Irāwan (Pace *et al.* 1951, 212).

The landscape at Tin Abūndā consists of (a) slope deposits below the main escarpment; (b) a zone extending for *c.*2km from the foot of (a), dissected by braided dry channels and (c) a very broad sand and gravel plain extending to (d) the sand sea some 30km to the N of the escarpment. A pronounced gypsum crust was recorded close to the old well at Tin Abūndā and represents a dried up lacustrine or swamp deposit (Fig. 1.1). The flat top of the Massāk plateau is not easily accessible up the escarpment, though one or two wadis are incised back into it close to Tin Abūndā. The plain is poorly vegetated, with few trees, except near its S edge, where a band of spring mounds and a line of acacia trees indicate the presence of sub-surface water. Most of the old wells for the caravan route were dug close to this S edge of the corridor.

Reconnaissance survey here in 1998 and 2000 revealed more detail about these cemeteries and

confirmed that Tin Abūndā is the most W point for dense cemeteries, though scattered cairns continue along the N flank of the escarpment to the W. More surprising was the discovery of at least two foggaras here (TAB 005 and 010), the most W known in the Wādī al-Ḥayāt system. Two palaeolithic handaxes were recovered from the spoil mound of the E foggara of the pair (TAB-2), which had possibly cut through a palaeolithic surface. The work in January 2000 was carried out in connection with a review of present oil exploration by REPSOL in this area (sites numbers prefixed 'R').
***Ills: AF 2*, Fig. 1.1.**

Figure 1.2. TAB 001, antenna tomb, from SE (photo: FP 2000).

Figure 1.3. TAB 001, sketch plan of antenna tomb (FP 2000).

TAB 001 Antenna tomb 26°26.47/12°23.73
A circular low mound cairn *c.*2.5m diameter with two diverging stone alignments outlined in small stones set vertically in ground. The arms run approximately NE for 4m and SE for *c.*6.1m. This is a small example of the so-called antenna tomb type and displays the normal E orientation (bisecting the angle between the two arms) (= R[EPSOL].22.1). ***LPAST***
***Ills: AF 2*, Figs 1.2-1.3.**

TAB 002 Antenna tomb 26°26.39/12°23.80
A larger example of the antenna tomb type, *c.*160m S of TAB 001, with SE arm *c.*35m long and NE arm *c.*47m long. (= R22.2). ***LPAST***

TAB 003 Cairn 26°26.45/12°23.77
An isolated cairn of 2m diameter to S of TAB 001 (= R22.3). ***LPAST? GAR?***

TAB 004 Antenna tomb, cemetery 26°26.68/12°24.77
Antenna tomb with an isolated orthostat (a marker?) due E of it. This tomb lies within a cemetery of small cairns distributed over *c.*200m of the lower escarpment slope (= R22.4). ***LPAST***

TAB 005 Foggara 26°26.68/12°27.05
This is the westernmost foggara recorded in the Wādī al-Ḥayāt system, traceable over *c.*0.4km from 26°28.86/12°27.01 to 26°29.06/12°27.08, running S-N from near the foot of the escarpment to an area of evaporite crust. It may originally have extended further S, but that area has been bulldozed recently. It converges at one point (26°28.92/12°27.07) to within 30m of the near parallel foggara TAB 010. Occasional individual spoil rings and shafts were discernible in the S sector, while its N course was traceable as a continuous bank of spoil. In a band of acacia trees (26°28.86/12°27.03) large palaeolithic cores were noted on the surface. (= R22.5). ***GAR* [PAL]**

TAB 006 Cemetery No co-ordinates
A large cairn cemetery directly below a projection on the escarpment. (= R22.6). ***GAR?***

TAB 007 Cemetery 26°26.80/12°25.26
Large concentration of cairns seen from old Ghat road. Not visited. (= R22.7) ***GAR?***

TAB 008 Cemetery 26°27.00/12°27.46
Large concentration of cairns seen from old Ghat road. Not visited. (= R22.8). ***GAR?***

TAB 009 Antenna tomb, cemetery 26°30.00/12°32.04
This is a very well preserved example of the antenna-type tomb within an extensive area of cairn graves (TAB 020). The monument consists of a *c.*3m diameter circular kerbed cairn (apparently robbed) set at the centre of an oval setting of irregular upright stones. Most of these outer stones are plate-like flat slabs set edgewise in the

ground, projecting *c.*30 cm above the modern surface. However, on the E side a group of taller orthostats was used, originally standing *c.*50-60cm, with a matching group of two similar orthostats on the W side. The line of sight over the two sets of stones is more or less due E and there are other cairn burials at 50-70m distance that align both to E and W. The space between the central cairn and the outer 'circle' had been carefully paved with irregular flat slabs of *c.*30-30cm length. On the E side of the central monument there was a small squarish arrangement of stones, again set edgewise in the ground, defining a box of *c.*1.8 x 2m, open to the E. It is unclear whether this represents a separate burial or could have served as a place for offerings to be placed. From the 'grave circle' two sinuous arms project 40m to NE and 43m to SE. These arms are defined by lines of small stones set edgewise in the ground and standing *c.*20cm above the modern surface. The width of these arms varies from *c.*1-4m and they were mostly unpaved – with the exception of a short length adjacent to the circle, the NE terminal and a small section in the middle section of the SE arm where a rough paving of small slabs (*c.*10cm length) was used. No diagnostic finds were recovered from the structure, apart from elements of general palaeolithic scatter that occurs right along this part of the escarpment (TAB 021). (=R23.9). ***LPAST*** **[PAL]**
Ills: AF 1**, 202;** ***AF 2*****, Figs 1.4-1.6, 1.8.**

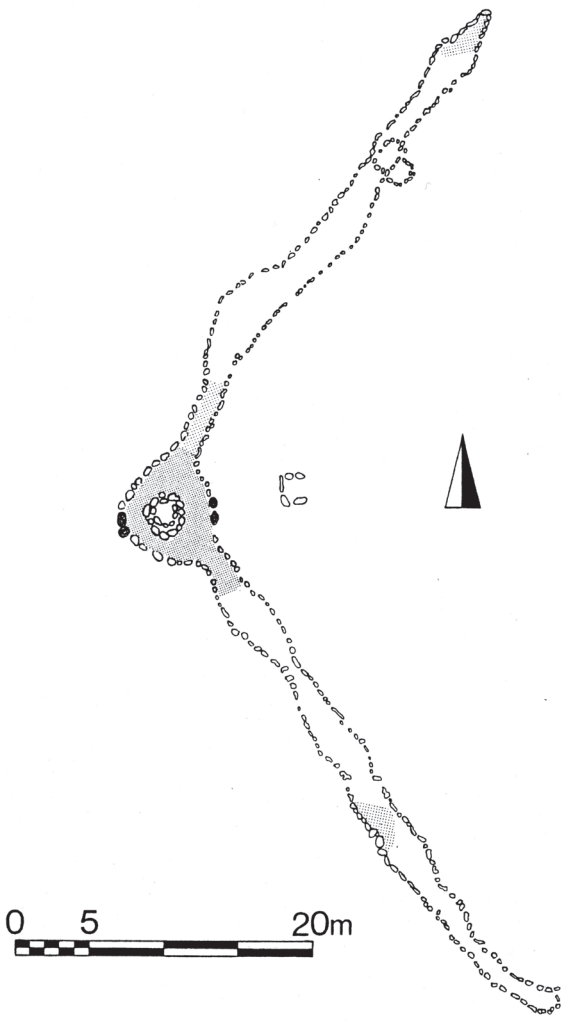


Figure 1.4. TAB 009, plan of antenna tomb (FP 2000).

TAB 010 Foggara 26°28.67/12°27.05
The E of the two foggara channels recorded at Tin Abūndā. Like TAB 005 it appears to have delivered water to an area of evaporite crust (26°29.50/12°27.02) near the location of the Tin Abūndā well. It is possible that this area of evaporites represents the zone irrigated by these foggaras. The foggara was traced across a distance of 1.25km from 26°28.67/12°27.05 to 26°29.34/12°27.13 and clearly originated further S towards the escarpment. At 26°28.88/12°27.06 the channel evidently converged with the near parallel course of foggara TAB 005. In one section the roof of the channel appeared to have collapsed (26°28.84/12°27.06), suggesting an original depth at that point of *c.*1m below the surface. Palaeolithic cores and bifaces from the spoil heaps suggest that the shafts have cut through palaeolithic deposits in places (=TAB 011). There are also at least two post-classical graves of Islamic type overlying the spoil heaps (26°28.72/12°27.04). ***GAR***
Ills: AF 2**, Fig. 42.1**

Figure 1.5. TAB 009, view looking due E (to L of ranging pole) over sighting stones either side of tomb (photo: FP 2000).

Figure 1.6. TAB 009, view of central burial and SE arm (photo: FP 2000).

TAB 011 Lithics scatter 26°28.67/12°27.00
Palaeolithic bifaces and cores from a possible activity site cut by shafts of foggara TAB 010. **PAL**

TAB 012 Cairn 26°28.59/12°30.40
A medium cairn (*c.*2m diameter) standing in isolation on the pediment *c.*0.8km from the foot of the escarpment. (= 21.1) ***LPAST? GAR?***

TAB 013 Stone alignments 26°28.26/12°30.52
Two sets of stone alignments on the boulder-strewn fans at the foot of the escarpment and *c.*400m of the cliff face. The lines run parallel with the escarpment and transversely to the slope. The alignments are each *c.*3-6m in length and set parallel to one another at a distance of 2-3m apart. It is possible they represent traces of old camp sites (tent bases), but there is no indication that they are of recent origin. (= R21.2-3).
***Ills: AF 2*, Fig. 1.7.**

TAB 014 Cairn 26°28.10/12°30.64
A medium cairn (*c.*2m diameter) standing in isolation on the pediment at the very foot of the escarpment. No associated finds (= R21.5). ***LPAST? GAR?***

TAB 015 Lithics scatter 26°28.19/12°30.52
A thin general scatter of palaeolithic flakes spread over several 100m of the escarpment base in the area of Sites TAB 013-014. (=R21.4). **PAL**

TAB 016 Hearth, occupation? 26°33.4/12°30.96
A possible temporary campsite indicated by a small piled-stone hearth (D: *c.*1m, H: 30cm) and fragment of a grindstone (= R23.10). ***PAST***

TAB 017 Occupation? 26°31.76/12°30.92
A possible domestic site, perhaps an encampment, indicated by fragments of handmade pottery, grindstones and scattered stones. The material was concentrated at the edge of a band of spring mounds running parallel to the escarpment (=R23.1). **PAST**

TAB 018 Occupation? 26°30.62/12°31.39
A possible domestic site, indicated by fragments of handmade pottery, grindstones and scattered stones. The material was encountered within a band of acacia trees running parallel to the escarpment (=R23.2). **PAST**

TAB 019 Cairns 26°30.16/12°31.82
Two piled stone type 1a cairns, one *c.*6m diameter x *c.*1.5m high, the other 2m in diameter (=R23.3). They are N outliers of the TAB 020 cemetery. ***LPAST? GAR?***
***Ills: AF 1*, 198**

TAB 020 Cemetery 26°30.00/12°31.81
An extensive cemetery of dispersed graves, spread over *c.*200m of escarpment pediment (cemetery morphological type 2), encompassing numerous cairns (TAB 020 and antenna tomb TAB 009). Some of the tombs are piled stone cairns (mostly type 1a, some corbelled 1b) of varying dimensions (2-4m diameter), others are more carefully built drum cairns (type 3a). At least one example had a centrally placed stone stele, while a number of cairns had attached structures, outlined in small stones ('altars' or associated burials?). (=R23.4). ***LPAST? GAR?***
***Ills: AF 1*, 198; *AF 2*, Fig. 1.8.**

TAB 021 Lithics scatter 26°30.10/12°32.00
A general spread of palaeolithic material (mainly flakes) along the lower slopes of the escarpment and underlying cemetery TAB 020, etc. (=R23.5). **PAL**

TAB 022 Stone alignments 26°29.95/12°31.96
A series of short stone alignments *c.*5m long and 3-4m apart. These are essentially similar to TAB 013 above. (=R 23.6).

TAB 023 Cemetery 26°29.97/12°31.99
A cluster of well-preserved cairns and drum tombs, some with crude stele, within the extensive cemetery TAB 020 (see above) (= R23.7-8). ***GAR?***

Figure 1.7. TAB 013, stone alignments (photo: FP 2000).

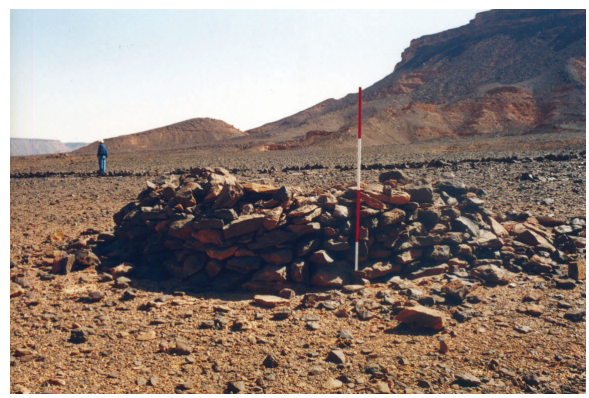


Figure 1.8. TAB 020, view of drum tomb in cemetery, with NE arm of antenna tomb TAB 009 in rear (photo: FP 2000).

TAB 030 Lithics scatter, antenna tomb 26°27.94/12°27.62

Lithics, including Acheulean biface, a 'berber' pot, graves and an antenna tomb. The site is on a Pleistocene lake shoreline about 530m above sea level. Sample of lake sediment collected for OSL dating. **PAL, PAST**

TAB 031 Lithics scatter 26°27.25/12°24.93

The scatter was located on Pleistocene lake sediments at an altitude of approximately 527m above sea level. Other finds included fragment of stone rubber/grinder. Melanoides shells were collected for dating. **PAL, MPAST?**

TAB 032 Lithics scatter 26°25.34/12°34.22

Late Acheulean site, *c.*80m diameter area with eroded bifaces and levallois cores and other débitage. (= R23.14). **PAL**

SECTION 2. IN ṬAFĀRĀT [IN TAFĀRĀT] (ITF)

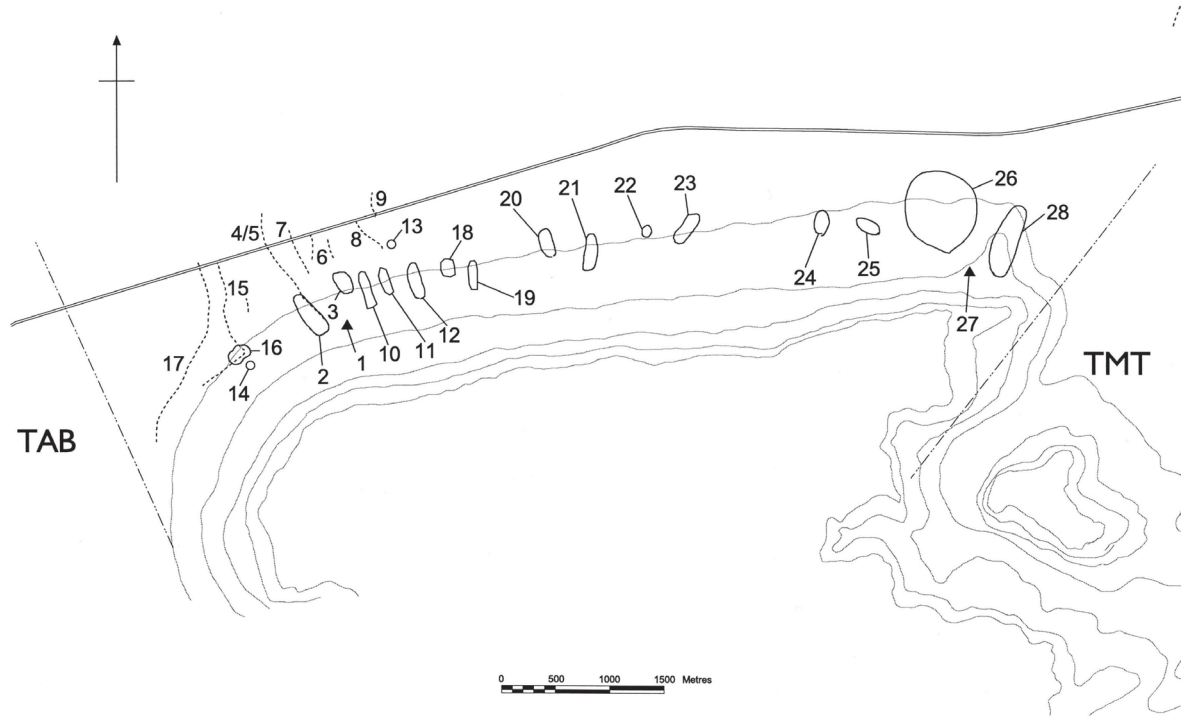


Figure 2.1. Map of sites in In Ṭafārāt sector (FP 2000).

Between Tin Abūndā and Ubārī there is no modern settlement or agriculture, but cemeteries of more or less closely scattered tombs (primarily cairns and drum tombs) are visible at various points along the escarpment foot in the region of In Ṭafārāt. The escarpment here runs approximately E-W, close to the ancient and modern track from Ubārī to Ghāt. To the E, the escarpment recedes to the S and was not visited (see Ad Tāmalālat survey below), while to the SW towards Tin Abūndā there is also a stretch where the road and escarpment diverge. Most of the 3000 tombs recorded between Tinda and Tin Abūndā by the Italian 'census' lie along the In Ṭafārāt escarpment frontage, but hitherto nothing was known of associated sites and it might have been presumed that these related solely to pastoral tribes, beyond the cultivated area. However, at the W end of this section of the escarpment a complex of eight foggaras (ITF 004-9, 015, 017) was traced during the FP fieldwork immediately below and around a settlement site and cemeteries. The settlement (ITF 001), a low hillock at the foot of the escarpment protected by a wall across its N front, with hut platforms and wall footings behind, produced only two sherds of pottery and a few late lithic chips; no saddle or rotary querns, or grinding stones, were found. It appears typical of the early Garamantian escarpment settlements. To the W an aceramic cemetery (ITF 002) was cut through by a later foggara (ITF 004); by contrast, a foggara to the E (ITF 008) appeared to respect a well preserved cemetery (ITF 012) of drum tombs with separate altars on their E sides, with imported amphorae of between the 2nd century BC and the 2nd century AD. On one stretch of foggara ITF 004 the upper 2m of the shafts was lined with small blocks where the foggara ran through unstable geology; shaft spacing here was very close, some 5-6m. The most W foggara in this area (ITF 017) was perhaps some 3km long, but its trace became indistinct to N of the line of the old road to Ghat. It too had closely spaced shafts (5-6m intervals centre to centre) in the sandy gravels close to the line of the old road, although near its source the shaft spacing was wider, *c.*13-15m. The foggaras appeared to run towards an area of acacia trees between the old and modern roads. One possible reading of the archaeological evidence might be that the settlement site ITF 001 and the aceramic cemeteries go together, and that the foggaras may be linked with an as yet unlocated settlement of the late centuries BC and early centuries AD whose existence is implied by the pottery found at the cemetery ITF 012 but which was lacking from the settlement ITF 001; but it must be admitted that this remains only a hypothesis.

A further series of sites (ITF 019-028) was recorded along the foot of the escarpment from a vehicle driving along the old Ghat road to the N. All coordinates are thus approximate.

All sites in the In Ṭafārāt area were recorded during reconnaissance work in the 2000 season.

***Ills: AF 1*, 242; *AF 2*, Fig. 2.1.**

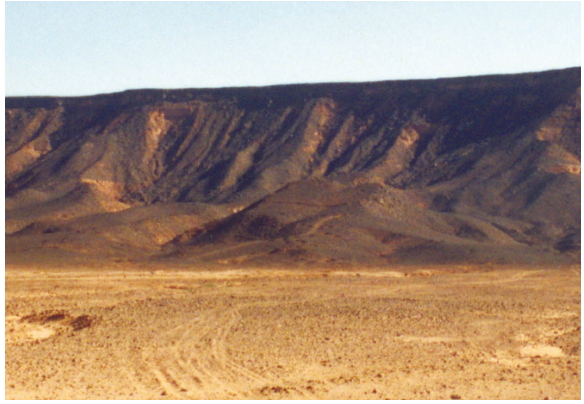


Figure 2.2. General view of settlement ITF 001 on flatiron formation in front of escarpment (photo: FP 2000).

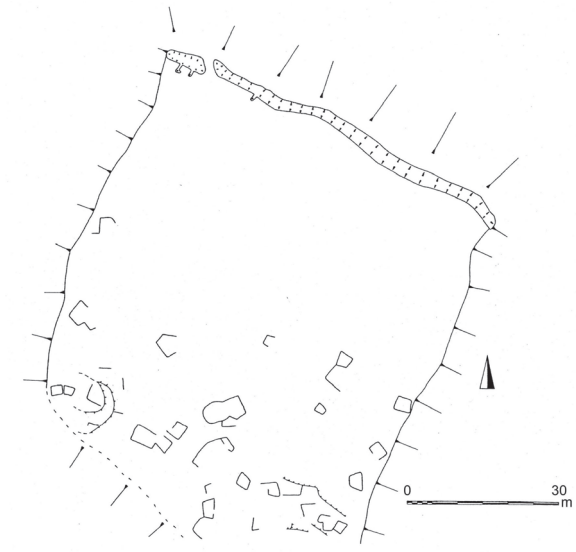


Figure 2.3. ITF 001, plan of escarpment settlement (FP 2000).

ITF 001 Escarpment settlement, inscription 26°31.51/12°35.84

This is a Tinda-type escarpment edge site (see below TIN 001) near the W edge of the In Ṭafārāt escarpment frontage. It is situated on an eroded outlier to the N of the escarpment on a steeply sloping site, defined (and protected) by gullies to S, E and W. The approach up the slope from the N is protected by a wall across the promontory. This drystone wall is *c.*50cm thick and survives only *c.*75cm high on the downslope side, though its size could have been augmented originally by mudbrick or timberwork. It would have been an awkward obstacle rather than a formidable defence. The interior of the site shows signs of artificial terracing and numerous structures. Stone footings for various sub-rectangular and oval buildings of 1-3 rooms can be made out. These buildings are similar to examples recorded in more detail at Tinda (TIN 001) and Zinkekrā (ZIN 001). A Libyan inscription is cut on a rock at the highest point of the site to the SE. [2000]. ***EGAR?*** **PUGAR, CGAR**
Ills: AF 1**, 141, 323;** ***AF 2*****, Figs 2.2-2.6.**

Figure 2.4. ITF 001, view of internal structures (photo: FP 2000).

Figure 2.5. ITF 001, the N wall looking S up the flatiron slope (photo: FP 2000).

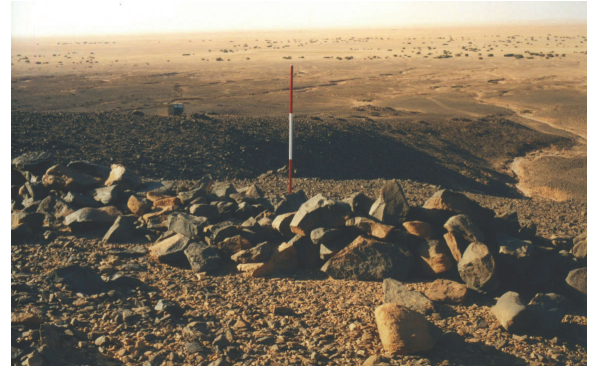


Figure 2.6. ITF 001, detail of the N wall of settlement, seen from inside. Cemetery ITF 003 is visible in the rearground (photo: FP 2000).

ITF 002 Cemetery 26°31.57/12°35.58

A large cemetery of at least 100 type 1a low mound cairns (av. Diameters 2-3m, a few larger examples up to 4-5m) lay immediately beyond the gully to the W and NW of site ITF 001. Some of the cairns are type 1c, with built up outer kerbs of drystone blocks and may be early variants of the normally better-executed drum cairns. One of the stone cairn tombs in the cemetery had foggara upcast against it. [2000]. ***PUGAR?***
Ills: AF 1**, 262;** ***AF 2*****, Fig. 2.9.**

Figure 2.7. ITF 003, drum tombs with separate stone setting for offerings to the E (on right of ranging pole) (photo: FP 2000).

Figure 2.8. ITF 003, large mound cairns below settlement ITF 001 (photo: FP 2000).

ITF 003 Cemetery 26°31.57/12°35.85
Cemetery of *c.*30 loosely clustered large drum tombs and cairns extending down the ridge to the N of ITF 001 (morphology of cemetery is Type 5). Most of the tombs in this cemetery appear to be either type 1a mound cairns or type 3a large drum cairns (D: 3-4m) with near vertical outer walls (H: ≤80cm), though almost all have been robbed and disturbed. Several of the drum cairns have small box-like structures ('altars') *c.*2m distance from their E sides. This unusual feature is paralleled in better-preserved examples at ITF 012. At both sites, these low 'altar' structures seem to fulfil a similar role to the classic Garamantian offering tables encountered further E. An unusual circular tomb (ITF 013) lies to the N and there are also a few outliers to the NE (ITF 010-011). [2000].
PUGAR? CGAR?
***Ills: AF 2*, Figs 2.6-2.8.**

ITF 004 Foggara, inscription 26°31.84/12°35.39
This foggara lies just NW of site ITF 001 and appears to have been cut through cemetery ITF 002. There is a sequence of open shafts steined with stonework between 26°31.82/12°35.42 and 26°31.73/12°35.46. The shafts were 8-9m deep at this point. A Libyan/Tifinagh inscription was found on a stone next to a foggara spoil ring at 26°31.69/12°35.50. There were no cairns or other structures nearby, so the closest relationship is certainly with the foggara (stone collected and brought to Jarma). [2000]. ***GAR***
***Ills: AF 1*, 242, 252, 262; *AF 2*, Figs 2.9-2.11.**

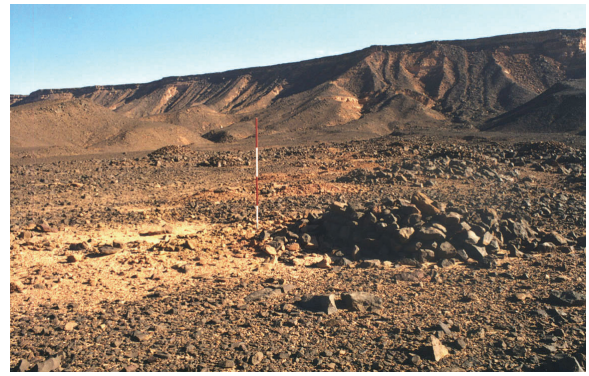


Figure 2.9. Foggara ITF 004 running through cemetery ITF 002 (photo: FP 2000).

Figure 2.10. ITF 004, closely spaced foggara shafts (photo: FP 2000).

ITF 005 Foggara 26°31.88/12°35.50
Foggara noted as a sequence of closely spaced spoil rings between ITF 004 and 006. [2000]. ***GAR***
***Ills: AF 1*, 242.**

Figure 2.11. Incised Libyan inscription on a stone block found by foggara ITF 004 (photo: FP 2000).

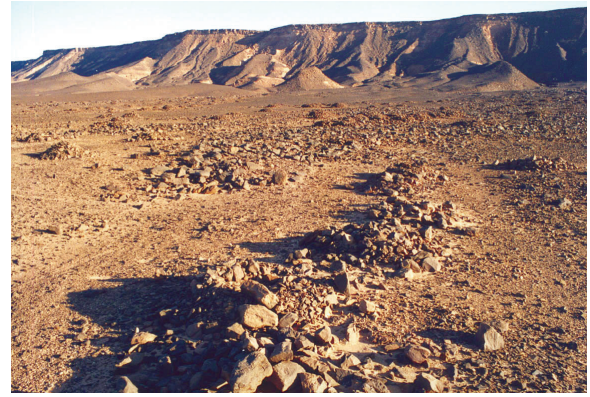


Figure 2.12. ITF 012, general view of cemetery looking SE (photo: FP 2000).

ITF 006 Foggara 26°31.92/12°35.61
This foggara had quite closely spaced shafts, every 7-9m, with contiguous spoil rings. The N end was eroded and indistinct (most N point recorded was 26°31.96/12°35.60). [2000]. ***GAR***
***Ills: AF 1*, 242, 250.**

ITF 007 Foggara 26°31.90/12°35.68
The recorded coordinates mark the most N visible point of this foggara – S extent not traced. [2000]. ***GAR***
***Ills: AF 1*, 242.**

ITF 008 Foggara 26°31.89/12°35.87
This foggara was marked by a series of very small and faint spoil rings, running N of cemetery ITF 012. The recorded coordinates mark the most N visible point of this foggara. [2000]. ***GAR***
***Ills: AF 1*, 242.**

ITF 009 Foggara 26°32.02/12°35.97
No further details of this foggara were recorded. ***GAR***
***Ills: AF 1*, 242.**

ITF 010 Cemetery 26°32.24/12°35.28
Cemetery of dispersed cairns E of ITF 003. ITF 011 to E across large gully may be continuation of same site. Located on APs but not visited on ground in 2000. ***GAR?***

ITF 011 Cemetery 26°32.18/12°35.21
Large cemetery of dispersed cairns E of ITF 010 across gully. Some Mousterian lithics in vicinity. ***GAR?*[PAL]**

ITF 012 Cemetery 26°31.79/12°35.97
A cemetery of over 100 cairns and drum tombs. A notable feature of this Type 5 cemetery was its well-preserved circular *bazina* or drum tombs (type 3b), each with a box-like 'altar' *c.*2m to the E (similar features were noted at ITF 003). The larger drums stand up to 1-1.5m high and are 3-4m diameter. Some may originally have been stepped. The 'altars' are simple box-like structures *c.*1m x 60cm, formed of stones set in the ground. Smashed bones and a small horn core collected from one 'altar' were identified as small mature ovicaprid or mouflon. Five other 'altars' examined had bone visible within. Some pottery and part of a stone bowl were collected; these finds were generally found near 'altars'. The pottery included local fabrics (including Garamantian hand-built pottery with cord impressed decoration on the rim) and imported amphorae (including body sherds and character sherds of Punic and Roman Tripolitanian type). **PUGAR, GAR**
***Ills: AF 2*, Figs 2.12-2.13, 44.4.**

ITF 013 Funerary monument 26°31.97/12°35.83
An isolated funerary monument of unusual type, near settlement ITF 001 and cemetery ITF 003. ITF 013 comprises a large cairn tomb (*c.*2.5m diameter) set within a circular stone enclosure (*c.*10m diameter). The burial was offset from the centre of the enclosure, lying closer to its W side. It was probably originally a low flat-topped structure, with an outer kerb of vertical stones (av. length 30-50cm) and an inner fill of smaller stone chippings. The tomb has apparently been robbed, to judge from a depression in its centre. The outer enclosure is formed of several (four?) concentric rings of small blocks (length 20-30cm) set in the ground. ***LPAST? GAR?***
***Ills: AF 1*, 203.**

ITF 014 Graves (?) 26°31.68/12°35.13
Two small type 6a grave mounds overlying the spoil bank of foggara ITF 015. Though they lack headstones, these are probably of Islamic date, perhaps related to people who died along the caravan route. [2000]. ***ISLAM-EMOD***

ITF 015 Foggara 26°31.75/12°35.10
This foggara (lying further W than ITF 004) shows on the air photo as almost L-shaped, with a pronounced bend in middle. It was traced on the ground for at least 1.3km from the mother well at 26°31.16/12°35.10 to 26°31.72/12°35.12 (it continued N of this point but was not followed). At 26°31.35/12°35.29, the foggara bent and ran through cemetery ITF 016, where its upcast

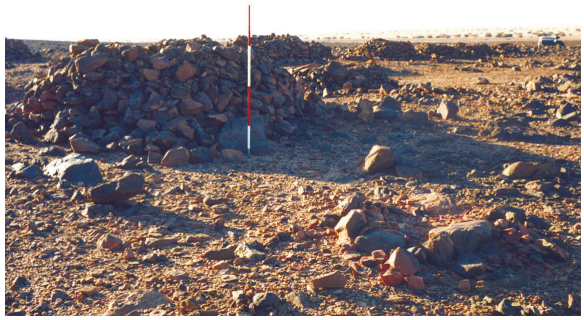


Figure 2.13. ITF 012, detail of large cairn in cemetery, with a stone setting (offering box) set about 2 m from its E face (photo: FP 2000).

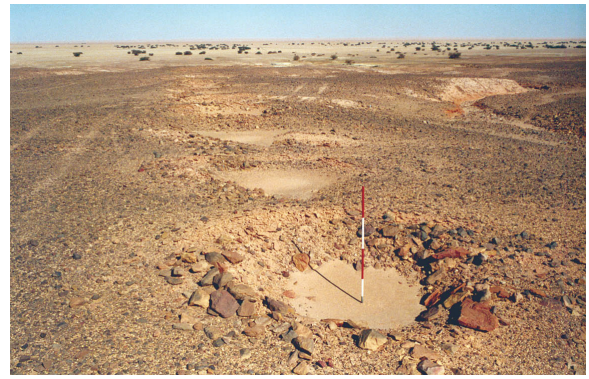


Figure 2.14. ITF 015, filled in shafts of foggara (photo: FP 2000).

bank lay against at least one tomb. The shaft spacing was *c.*13m near the mother well, reducing to *c.*5-6m towards the N end of the preserved section. ***GAR***
***Ills: AF 1*, 242; *AF 2*, Fig. 2.14.**

ITF 016 Cemetery 26°31.26/12°35.22
Scatter of 30-40 dispersed cairns which may predate foggara ITF 015, which cuts through this area. [2000]. ***GAR?***

ITF 017 Foggara 26°30.94/12°34.87
This is the most W recorded foggara of the ITF group – the next examples are those recorded at Tin Abūndā some 13km to the W. The coordinates given relate to the mother well, from where it extended at least 1.7km to 26°31.73/12°35.04 or possibly to 26°31.83/12°35.05 (as an open channel between banks). In its S portion the shafts were widely spaced at 12-15m. ***GAR***
***Ills: AF 1*, 242.**

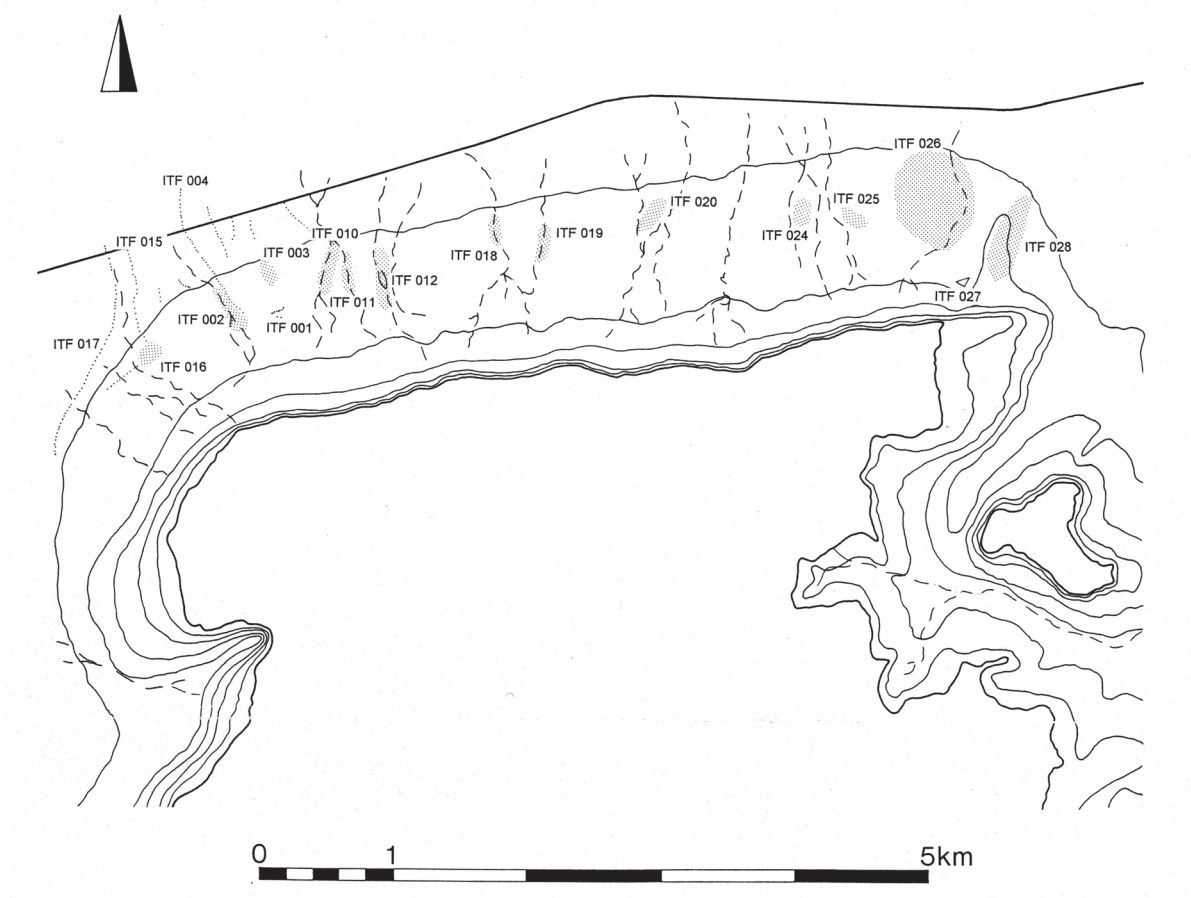


Figure 2.15. Topographic location of In Ṭafārāt sites (FP 2000).

ITF 018 Cemetery 26°31.92/12°36.34
This is another large Type 5 cemetery with type 3b drum tombs and 'altars' (similar to ITF 012). The coordinates refer to an outlier of the main cairn group, and the cemetery extended SW of this point. ***PUGAR, CGAR***

ITF 019 Cemetery 26°32.08/12°36.13
Dispersed cairn cemetery (not visited). ***LPAST? GAR?***

ITF 020 Cemetery 26°32.24/12°36.65
Small dispersed cairn cemetery (not visited). ***LPAST? GAR?***

ITF 021 Cemetery (?) 26°32.33/12°36.85
Possible dispersed cairn cemetery (though could be scree). ***LPAST? GAR?***

ITF 022 Cemetery (?) 26°32.40/12°37.05
Possible dispersed cairn cemetery (though could be scree). ***LPAST? GAR?***

ITF 023 Cemetery (?) 26°32.47/12°37.34
Possible dispersed cairn cemetery (though could be scree). ***LPAST? GAR?***

ITF 024 Cemetery 26°32.43/12°37.83
Small cemetery with a few cairns (not visited). ***LPAST? GAR?***

ITF 025 Cemetery 26°32.44/12°37.96
Medium-sized cairn cemetery (not visited). In between ITF 025 and ITF 026 a few scattered cairns and one large one were noted. ***LPAST? GAR?***

ITF 026 Cemetery 26°32.46/12°38.44
A large cairn/tomb cemetery close to another possible escarpment settlement site (ITF 027 (not visited). ***GAR***

ITF 027 Escarpment settlement 26°31.50/12°38.50
Seen from road and not visited, this is apparently a similar site to ITF 001, with a wall running perpendicularly across the slope of a steep promontory defined by gullies immediately in front of the main escarpment at the E end of the In T̤afārāt formation. The site is also visible on APs and appears to be another small escarpment settlement of the Tinda type. It lies immediately S of the large cairn cemetery ITF 026, with a further large cemetery visible a short distance to the E. ***EGAR? PUGAR?***
***Ills: AF 2*, Fig. 2.15.**

ITF 028 Cemetery 26°32.00/12°39.00
A large dispersed cairn cemetery at the E end of the escarpment, close to the possible settlement site ITF 027 (not visited). ***GAR***

SECTION 3. AD TĀMALĀLAT [TĀMALĀLAT] (TMT)

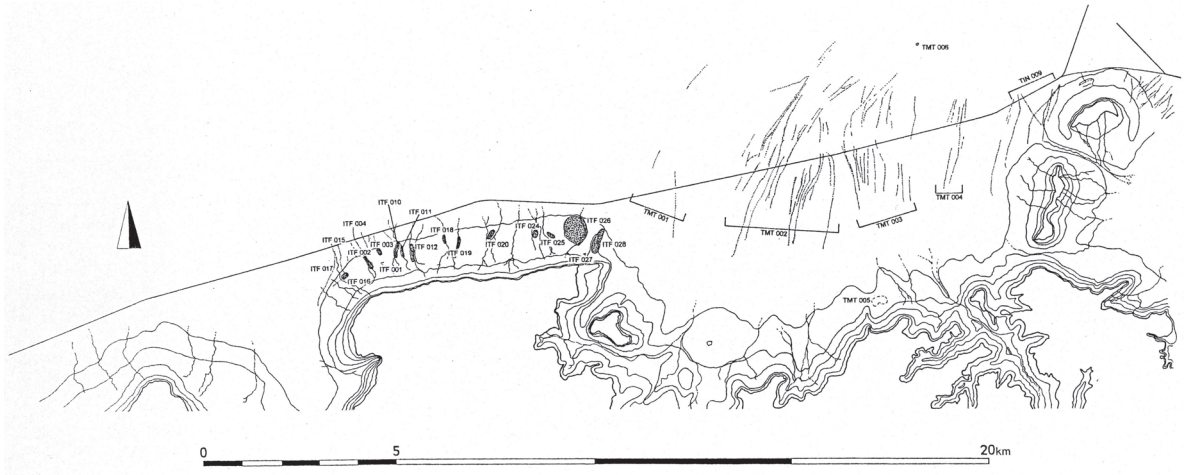


Figure 3.1. Map showing relation of the sites in ad Tāmalālat sector with the In Ṭafārāt and Tinda sectors (FP 2000).

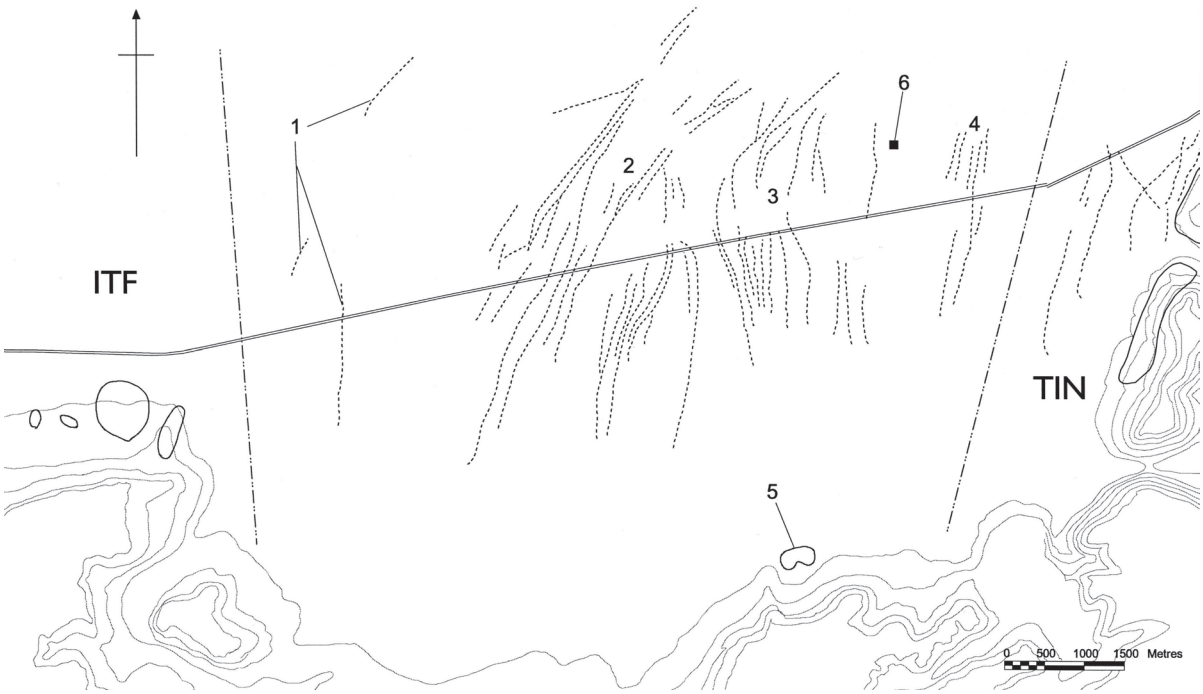


Figure 3.2. Detailed map of ad Tāmalālat area (FP 2000).

The plain of the Wādī Irāwan widens markedly between the advanced promontory of Tinda by Ubārī and the N projection of the escarpment front of In Ṭafārāt (Fig. 3.1). With the exception of a zone of modern fields irrigated by artesian wells immediately W of Ubārī town, the plain is uncultivated and supports relatively few trees. Until the recent extension of these irrigated agricultural schemes, the change in landscape from E to W of Ubārī was quite dramatic, with a sudden transition from the extensive date stands and irrigated gardens on one side to an arid, barren plain on the other. There are no early modern permanent villages W of Ubārī. That this pattern does not correspond with antiquity is indicated by the extensive traces of foggara systems with 30-35 channels running from SW to NE across this plain. These appear to have watered areas now occupied by the new agricultural schemes. These foggaras form four main groups (TMT 001-004), which have been plotted from AP coverage. A few examples were briefly examined on the ground in 2000. While one *qasr* structure (TMT 006) was identified on APs in the Wādī centre, it seems likely that any ancient settlement in the area watered by these foggara will now lie under modern fields.

The general area goes by the name of Ad Tamelalt/ Tamallet on some of the maps of the area and this name has been adopted here. The area was traversed during 2000, but the escarpment edge was not visited. However, AP coverage indicates that the escarpment edge is empty of cemeteries in this area apart from one small group of cairns near the centre of the embayment (TMT 005).
***Ills: AF 1*, 242; *AF 2*, Figs 3.1-3.2.**

TMT 001 Foggara group 26°32.40/12°39.48
Western outliers of foggara group, identified on AP coverage. At least 2 channels. ***GAR***
***Ills: AF 1*, 242.**

TMT 002 Foggara group 26°32.30/12°40.32
Large group of *c.*15 long channels, showing little braiding, extending to NE to edge of modern cultivation at *c.* 26°34.53/12°42.41. The mounds of a number of the foggaras are far more prominent than those encountered further W, suggesting either deeper water sources or a longer history of use and maintenance. In many cases the individual spoil rings are no longer clear, having become incorporated into a continuous bank of spoil. Some palaeolithic bifaces were noted on the foggara line between 26°33.53/12°41.87 and 26°33.83/12°42.06. [2000]. **CGAR [PAL]**
***Ills: AF 1*, 242.**

TMT 003 Foggara group 26°33.06/12°42.28
Group of *c.*10-12 foggara channels running N-S and then bearing NE towards area of TMT 006. Some shafts on foggara in this group were evidently steined with a mudbrick lining (visible at surface around 2 shafts) to prevent collapse of the surrounding sand into the shaft. The shaft dimensions thus indicated were 1m x 60cm internally. [2000]. ***GAR***
***Ills: AF 1*, 242.**

TMT 004 Foggara group 26°33.00/12°44.34
A cluster of *c.*5 foggara channels, best preserved to the S of and close to modern road, N of which they disappear into the zone of modern irrigated agriculture. Plotted from APs. [2000]. ***GAR.***
***Ills: AF 1*, 242.**

TMT 005 Cemetery 26°31.02/12°43.08
Cemetery of estimated 75-100 dispersed cairns scattered around lower slopes of N and E sides of small hill. Identified on APs only. ***GAR?***

TMT 006 *Qasr*? 26°33.80/12°43.74
Large enclosure, probably with corner towers, estimated *c.*50m square. Traces of a further large tower/gate on W side. Identified on APs only and not located on ground. ***LGAR?***

SECTION 4. TINDA [TINDA] (TIN)

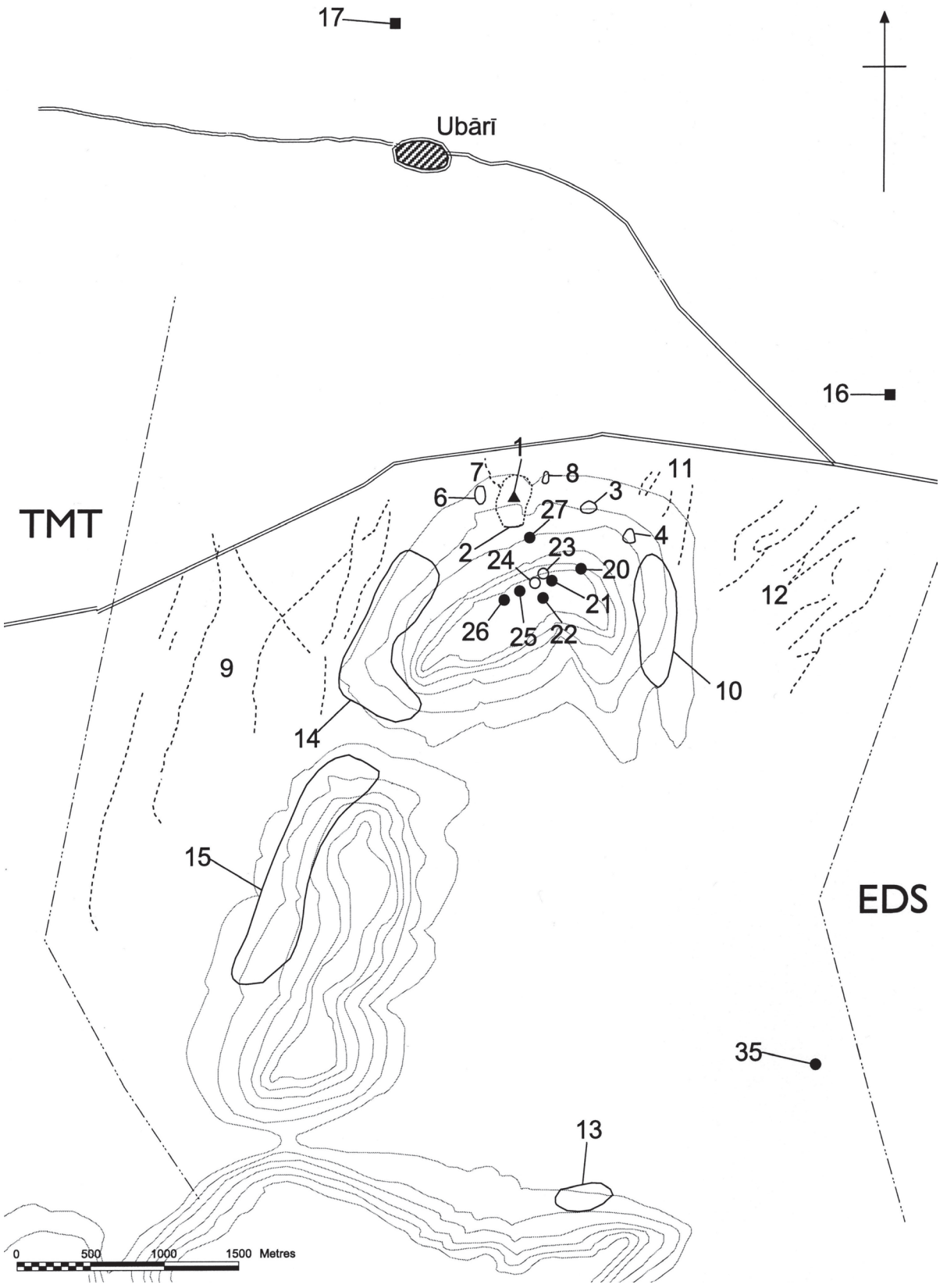


Figure 4.1. Map of sites in Tinda sector (CMD/FP).

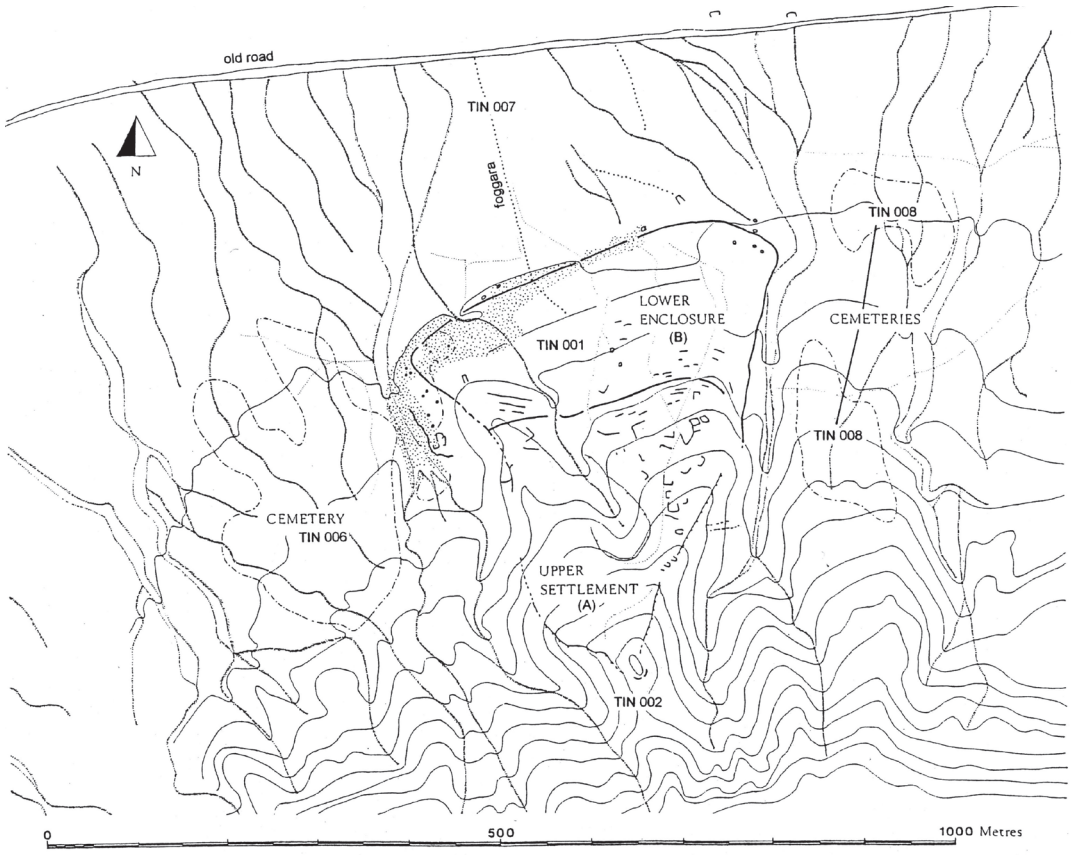


Figure 4.2. Overall survey of the Tinda escarpment settlement (TIN 001) and related sites (CMD1973, with FP 2000 additions).

The prominent headland of Tinda, just S of Ubārī marked the W limit of CMD's fieldwork and, in the late 1950s, the W end of permanent settlement in the Wādī al-Ajāl (al-Wādī al-Gharbī). In the 1930s, the total population of the al-Wādī al-Gharbī had declined to only *c.*2,200 souls (Scarin 1934, 77) and even in the 1950s and 1960s the region remained comparatively poorly developed. As is evident from air photographs of that time, there was almost no permanent settlement or cultivation in the Wādī W of Tinda-Ubārī, though pumped irrigation now supports some substantial agricultural schemes immediately W and E of Ubārī. A first reconnaissance of this part of the Wādī was made in 1962, but survey of the escarpment around the Tinda headland only began in 1965. Following the discovery of a large escarpment settlement (TIN 001) later work remained focused here. Subsequently, no further ground survey of the adjoining areas along the escarpment or within the Wādī appears to have been carried out by CMD, nor does the flat hilltop above Tinda seem to have been visited at that time.

In the early 20th century Ubārī (Scarin 1937b, 626 – 1,359 inhabitants, 2,500 palms), was described as a walled settlement with a central *qasr*, though the 1958 air photographs reveal a very small and loosely structured settlement. However, part of Ubārī's historical importance was due to a significant component of Tuareg 'inhabitants', whose regular periodic visits did not contribute markedly to the architectural core of the settlement.

By the time of the FP work the massive expansion of Ubārī town and agricultural schemes around it had transformed this area and new settlements, roads, fields and rubbish dumps are now encroaching onto sites around the Tinda headland. Major aggregate quarries to the S of the headland will have destroyed any archaeological sites in this area. A tarmac road has also recently been constructed up the S side of the hill giving access to the top. A number of sites were relocated or newly identified as part of the FP work. Sites with FP2000-03 identifiers were recorded by fieldwalking during the 2000 season.

***Ills: AF 1*, 242-43; *AF 2*, Fig. 4.1.**

TIN 001 Escarpment settlement 26°34.05/12°46.62

The site was first identified during 1965. It was originally planned to carry out further work at this site during 1970 but local conditions made it impossible to work on the site at that time, and its full survey and test-excavation only took place in April 1973 (the results of the excavations will be published in AF 3).

The results suggested the possibility of two phases of activity. The main occupation may be dated to the later first millennium BC, on the basis of imported pottery of 'late Punic' types, and AMS dates. It was marked by several areas of small platforms constructed on the hillside each associated with building foundations and hearths.

Figure 4.3. TIN 001, oblique view of the flatiron formation on which the settlement is located. The N embankments of the settlement are clearly visible in the middle distance before the trees (photo: FP 2000).

Figure 4.4. TIN 001, view NE across lower enclosure showing double earthworks marking N edge of the settlement (photo: CMD 1965).

The whole had been surrounded by a large enclosure bank/wall. Some later occupation was associated with imported Roman pottery, consisting mainly of amphorae and bowls, but lacking finewares. The extent to which this material was derived from settlement on the site rather than later burials which encroached onto the site remains uncertain. There was probably no significant occupation on the site by the 1st century AD and its successor in the Classic Garamantian period is most likely lost beneath modern Ubārī.

The main settlement TIN 001 was an approximately triangular area running up the hillside, with two substantial enclosure walls forming its base and lower sides, the bottom wall being *c.*5m wide. The upper enclosure wall was quite well defined but appears more as a terrace than a faced free-standing structure. A further stone bank ran across the lower enclosure.

By 1969, the E side of the lower enclosure wall had been much damaged but APs of the 1950s show at least two entrances in the centre and at the NW corner of the N (lower) enclosure wall. A foggara channel passed below the centre of the lower enclosure wall (see TIN 007 below).

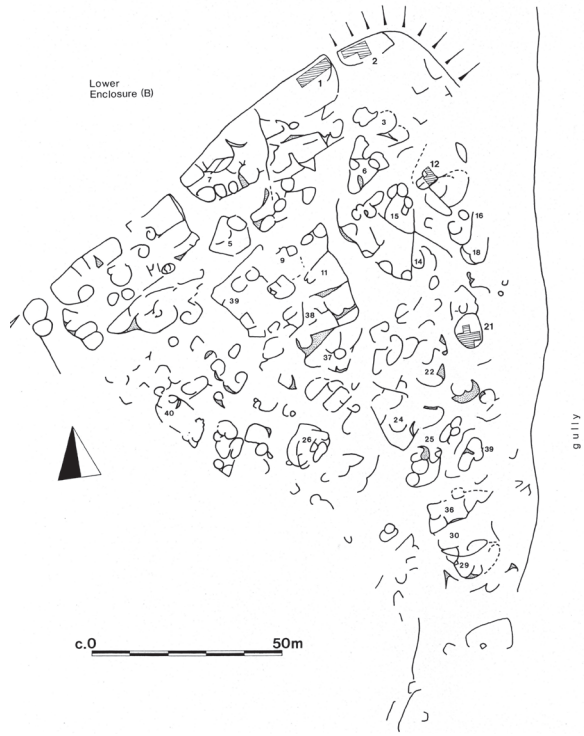


Figure 4.5. TIN 001A, detailed plan of structures in upper enclosure (CMD 1973).

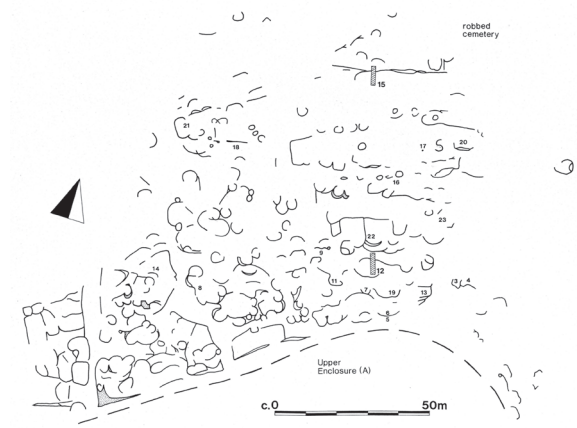


Figure 4.6. TIN 001B, detailed plan of structures in lower enclosure (CMD 1973).

Figure 4.7. TIN 001, E defences of the settlement looking N (photo: FP 2000).

Area A, The Upper Enclosure.
This part of the hillside was covered by a series of terrace platforms and related structures over an area of 1-1.5ha. Individual 'structures' ranged from single platforms or enclosures to large multi-unit complexes. Exploratory excavations were undertaken in four locations: A1 and A2 on either side of the entrance opening into the lower enclosure, and A12 and A18 above. These excavations revealed very limited occupation levels and material. The small quantities of pottery recovered included imported 'late-Punic' wares of the later 1st millennium BC; AMS dates on grain recovered from area A2 (2117±37BP and 2074±40BP) are consistent with occupation in the 3rd-1st century BC.
Area B, Lower Enclosure
Within the Lower Enclosure (B), structural remains were most evident in its upper central area. These included small terraces, low stone foundations and enclosures, but these lacked the complex cellular structure of features within the Upper Enclosure. Sherd collections were made and two areas test-excavated (B12, B15), with a further section (BA) cut through the Lower Enclosure wall.

The test excavations again revealed very limited occupation deposits, although there were indications of severe erosion. A section cut through the N enclosure wall confirmed that it was originally roughly faced with stones set in mud mortar. Sherd material from the lower enclosure included significant quantities of imported 'late-Punic' wares as well as some potentially later material, some probably derived from robbed graves in the area.

Some disturbed graves also found in NW (Cemetery 'D'/BW) and NE (BE area) corners of Lower Enclosure, the former largely destroyed by 1973. These may include burials of the early centuries AD. [1965, 1973, 2000]. **LPAST? EGAR? PUGAR, CGAR**
***Ills: AF 1*, 141, 161; *AF 2*, Figs 4.2-4.7.**

TIN 002 Wall 26°33.91/12°46.58
Solid stone wall around S side of small peak above TIN 001, with attached tower-like structure. The wall provides added strength to the defences of TIN 001 on its S side and is somewhat comparable with the walls at Zinkekrā (ZIN 900). There appears to have been a gate here through which a path runs to rock art site TIN 027 and the hilltop above. [1973, 2000]. ***PUGAR***
***Ills: AF 2*, Figs 4.2, 4.8.**

TIN 003 Cemetery 26°33.80/12°46.86
Small dispersed cairn cemetery area on NE slopes of headland. Noted during ground survey but no detailed recording. Estimated 30-50 graves from air photographs. [1973]. ***GAR***

TIN 004 Cemetery 26°33.70/12°46.98
Dispersed cairn cemetery area on NE slopes of headland, SE of TIN 003. Noted during ground survey but no detailed recording. Estimated 50-80 graves from air photographs. Continuation of TIN 003? [1973]. ***GAR***

TIN 006 Cemetery 26°33.80/12°46.32
Large nucleated cemetery to W of TIN 001, with elements possibly encroaching on W side of enclosure. Estimated 100-150 tombs. Located during initial surveys but not otherwise examined. (originally Tinda Cemetery 'E'). [1973]. ***CGAR***

TIN 007 Foggara group 26°34.18/12°46.50
One and possibly a further two channels running N from edge of TIN 001 enclosure. Only one example well-defined on APs, extending at least 250m to N of enclosure. This example is noteworthy in apparently originating inside the lower enclosure of the TIN 001 settlement. About three spoil rings are visible at the upstream end. Downstream of these much has been destroyed by bulldozing, including the point at which the enclosure wall should have crossed the foggara, thus removing any stratigraphic relationship between them. To the N of the wall is a better preserved stretch of spoil rings with unusually close shaft intervals of *c.*3.8m (internal diameters of the rings = 2.9m). Further N still, quarrying for aggregates has exposed a line of three shafts, 1.10, 1.20 and 1.10m in diameter, with shaft intervals of 4.2 and 3.6m centre-to-centre. The shaft spacing on this foggara is the closest yet recorded on any foggara in the Fazzān. [1973, 2000]. ***GAR***
***Ills: AF 1*, 243**

TIN 008 Cemetery 26°34.13/12°46.76
Small nucleated cemetery to E of TIN 001 lower enclosure with *c.*75-100 tombs. Superstructures marked by low mounds of stone rubble, *c.*50cm high, max. D: 5m, over central, often stone-lined, cists *c.*1m diameter. Surface sherding recovered amphora fragments and RS, some datable to 5th century AD. Largely undisturbed in 2000 apart from few vehicle tracks crossing it. (originally CMD's Tinda Cemetery 'C'). [1973, 2000]. **LGAR**

TIN 009 Foggara group 26°33.50/12°45.60
Group of five foggara channels running along and below W slopes of Tinda headland, towards NNE. Longest examples *c.*2-2.5km long. Three run N and one NW; two of these are crossed by a fourth channel running

Figure 4.8. TIN 002, wall and tower controlling access to TIN 001 settlement from S (photo: FP 2000).

NE, which converges with another channel to the W of TIN 001. ***GAR***
***Ills: AF 1*, 243.**

TIN 010 Cemetery 26°33.40/12°47.10
Extensive dispersed cairnfields extending along *c.*1km of the E side of the headland. SE of TIN 004. Estimated 400-500 upstanding tombs. Identified from APs and not surveyed by CMD. [1965, 1973, 2000]. ***LPAST? GAR?***

TIN 011 Foggara group 26°34.00/12°47.00
Cluster of at least six converging foggara channels running N from the NE slopes of the Tinda headland, with the longest example *c.*1km long. In their final sections they appear as channels between two broad banks, perhaps the result of the collapse of the tunnel roof and subsequent clearance. [2000]
F60: Foggara to NE of Tinda enclosure, visible as circular depressions with low rings (internal diameter *c.*2.9m). Sample shaft intervals: 5.6, 6.5, 6.9, 6.7 and 6.7m.
F61: Next foggara to E, visible as circular depressions with well-defined low spoil rings. Aligned 30°±5°. Sample shaft intervals: 9.5, 9.6, 11.7, 9.7m (most upstream shafts); 4.8, 4.7, 4.6, 4.4m (a little further downstream).
F62: Foggara to E of F61, visible as widely-spaced circular light patches in an area of dark rock. Aligned 186°± 3°. Sample shaft intervals: 12.7, 11.9, 13.0, 12.8, 11.5 and 12.0m. ***GAR***
***Ills: AF 1*, 243.**

TIN 012 Foggara group 26°33.50/12°48.00
A cluster of eight main foggara channels, three with V-shaped tributaries in upper reaches, running NE from the E side of the Tinda headland, with the longest example *c.*1.5km long. As with TIN 011, the N ends of some of these foggaras appear as channels between parallel continuous mounds. ***GAR***
***Ills: AF 1*, 243; *AF 2*, Fig. 4.9.**

TIN 013 Cemetery 26°31.50/12°46.62
Thin scatter of cairns along the escarpment base. Estimated 20-30 tombs, but poorly defined. Identified from APs and not surveyed on the ground. ***LPAST? GAR?***

Figure 4.10. TIN 016, interior of qasr (photo: FP 2000).

TIN 014 Cemetery 26°33.50/12°45.90
Large dispersed cairnfield along W slopes of Tinda headland with at least two discrete groups of nucleated graves of typically 'classic Garamantian' form within the area. Estimated minimum of 300 graves. Identified from APs and not surveyed on the ground. ***LPAST? GAR? CGAR***

TIN 015 Cemetery 26°32.80/12°45.54
Dispersed cairnfield along W slopes of hill to S of Tinda headland. Estimated minimum 75-100 graves. Identified from APs only and not surveyed on the ground. ***LPAST? GAR?***

TIN 016 *Qasr*, marabout tomb 26°34.44/12°48.00
Large subrectangular ruined *qasr* (*c.*35m E-W, 25m N-S). Identified on APs but not further investigated by CMD. Relocated in 2000, now within cultivation on SE margins of Ubārī. Structure survives in part 3-storeys high, with a *c.*10m square tower projecting at the SE corner. The outer walls of the *qasr* and tower stand *c.*10m high and are 1m+ thick. On the N and W sides the walls are additionally buttressed by a sloping batter of large sandy yellow mudbricks (=50cm). Traces of further less substantial

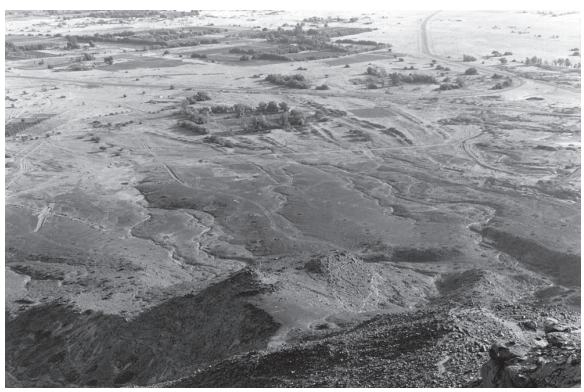


Figure 4.9. TIN 012, foggaras below the Tinda escarpment (photo: FP 2000).

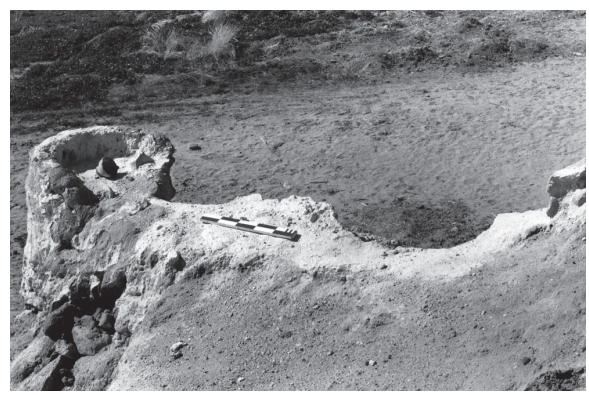


Figure 4.11. TIN 016, detail of marabout tomb built outside qasr (photo: FP 2000).

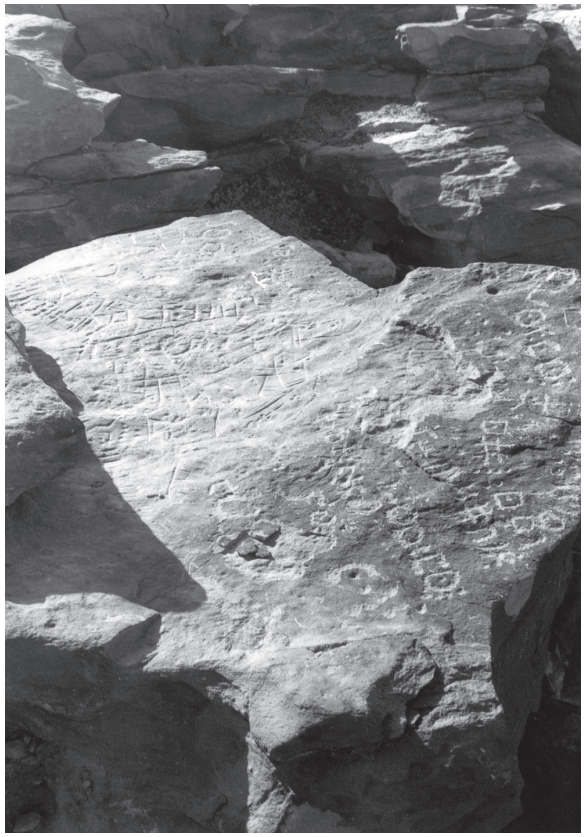


Figure 4.12. TIN 020, inscriptions and other engravings on flat rock at edge of Tinda promontory (photo: FP 2000).

buildings are butted against the S side of the structure. A whitewashed marabout tomb has been built on top of a wall near the SW corner of the structure, possibly after the main phase of occupation here? Within the *qasr*, the main internal range was against the inner face of the W wall, with another substantial room in the NE corner. [2000]. ***ISLAM-EMOD?***
***Ills: AF 2,* Figs 4.10-4.11.**

TIN 017 *Qasr* 26°36.20/12°45.90
Near square enclosure with corner towers and probably interval towers. Estimated 35-30m square. Identified on APs only and not located on the ground. ***ISLAM?***

TIN 020 Inscriptions 26°33.76/12°46.85
Libyan inscriptions along cliff edge at NE corner of hilltop. [2000]. ***GAR-EMOD***
***Ills: AF 1*, 289, 300; *AF 2,* Figs 4.12-13.**

TIN 021 Mosques 26°33.74/12°46.76
Cluster of four 'desert mosques' on top of the Tinda headland. The mosques are delineated by low mounds (<10cm high) of heaped stones and chippings, with cleared sandy areas in between. Clapperton described them thus: "cleared places … large enough for a man to say his prayers in which places are always of the same form being an oblong square the shortest side presented towards the holy city of Mecca" (Bruce-Lockhart and Wright 2000, 94). The four examples recorded show considerable variation in size from *c.*4 x 1.5m (with undivided interior) to 10 x 5.5m (with three transverse divisions of the interior). [2000]. ***EMOD***
***Ills: AF 1*, 186; *AF 2,* Figs 4.14-4.15.**

Figure 4.13. TIN 020, tracing of sandal engraving (FP 2000).

TIN 022 Funerary monument? 26°33.76/12°46.73
An unusual oval area *c.*32m (E-W) x 5m (N-S), demarcated by a 50cm wide gully cleared of stones, with a central cleared area *c.*14 x 1.5m. This unusual feature may possibly be associated with Clapperton's "pious Shireef whose mortal remains the Tuaricks hold in great veneration" (Bruce-Lockhart and Wright 2000, 92), given that the desert mosques mentioned in the same account are clustered immediately adjacent to this feature. It may even be the place of burial of the holy man. [2000]. ***EMOD?***
***Ills: AF 2,* Fig. 4.15.**

TIN 023 Cairn 26°33.74/12°46.76
A circular type 1 cairn (D:*c.*3m), robbed in the middle, but still standing to *c.*40cm high, located close to TIN 021-22. This could mark the burial of Clapperton's holy man (see TIN 022), but the robbed state and the form of the tomb may indicate that it is older. (cf. TIN 024 below). [2000]. ***LPAST? GAR? EMOD?***
***Ills: AF 2,* Fig. 4.15.**

TIN 024 Cairns 26°33.76/12°46.73
Two robbed type 1 cairn burials (D:*c.*2m) near the NW end of the Tinda plateau. Fragments of impressed pottery found in immediate vicinity. [2000]. ***LPAST?***

TIN 025 Rock art, inscriptions 26°33.80/12°46.60
Small group of engravings on cliff edge *c.*50m W of TIN 024. [2000]. ***GAR-EMOD***

Figure 4.14. TIN 021, 'desert mosque' 1. The cleared areas represent the prayer hall, with the niche for the mihrab marked out by a curve in the centre of the piled stone/gravel walls (photo: FP 2000).

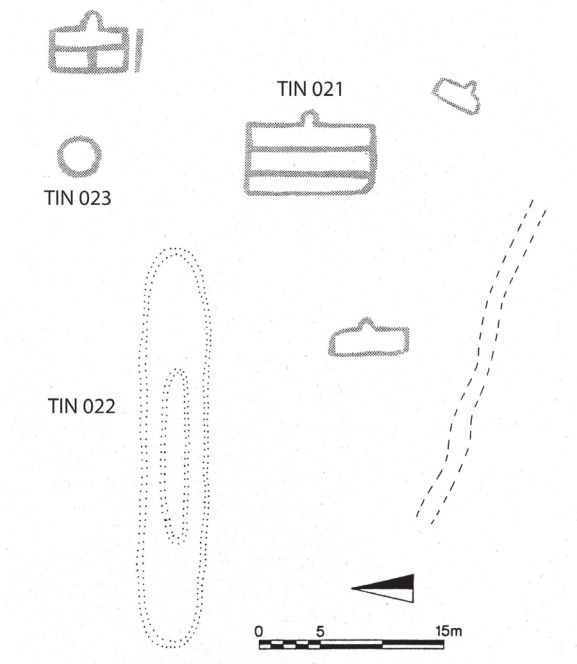


Figure 4.15. Sketch plan of the series of desert mosques TIN 021, the oval feature TIN 022 and cairn TIN 023 (FP 2000).

TIN 026 Other structures 26°33.68/12°46.49
Stone features at W end of plateau. These include *c.*25 subcircular structures up to 3.5m in diameter. Some use large blocks while others use smaller stones. At least two have had small pits cut into them, probably quite recently. There is also much modern disturbance in the area, with vehicle tracks cutting across here. The interiors of these structures appear indistinguishable from exterior 'natural' surfaces and no indications of significant occupation associated with them. [2000]

TIN 027 Rock art, inscriptions 26°33.83/12°46.65
Large group of rock art and inscriptions on N-facing rockface at head of ravine/gully which runs from ancient spring line. These include numerous Libyan and Arabic inscriptions, carved hand and footprints as well as horsemen and camels. This is the site described by Clapperton in his diary: "We ascended at the north end and about halfway up where the sandstone rock was bare for about 50 feet long and 30 feet high [forming a precipice] we found it nearly covered with inscriptions in the Tuarick characters." (Bruce-Lockhart and Wright 2000, 92). [2000]. ***GAR-EMOD***
***Ills: AF 1*, 291, 319; *AF 2,* Figs 4.16-4.17.**

Figure 4.16. Location of TIN 027, a rock shelter, possibly at an ancient spring (photo: CMD 1965).

Figure 4.17. Detail of the overhang at TIN 027 where many engravings found (photo: CMD 1965).

TIN 035 Lithics scatter 26°31.98/12°47.47
The site is located at the base of the escarpment. The only recovered item was a flaked bifacial axe of middle/late pastoral date. [2000]. **M-LPAST**
***Ills: AF 2*, Fig. 42.6.**

SECTION 5. AD-DĪSA [ED-DISAH] (EDS)

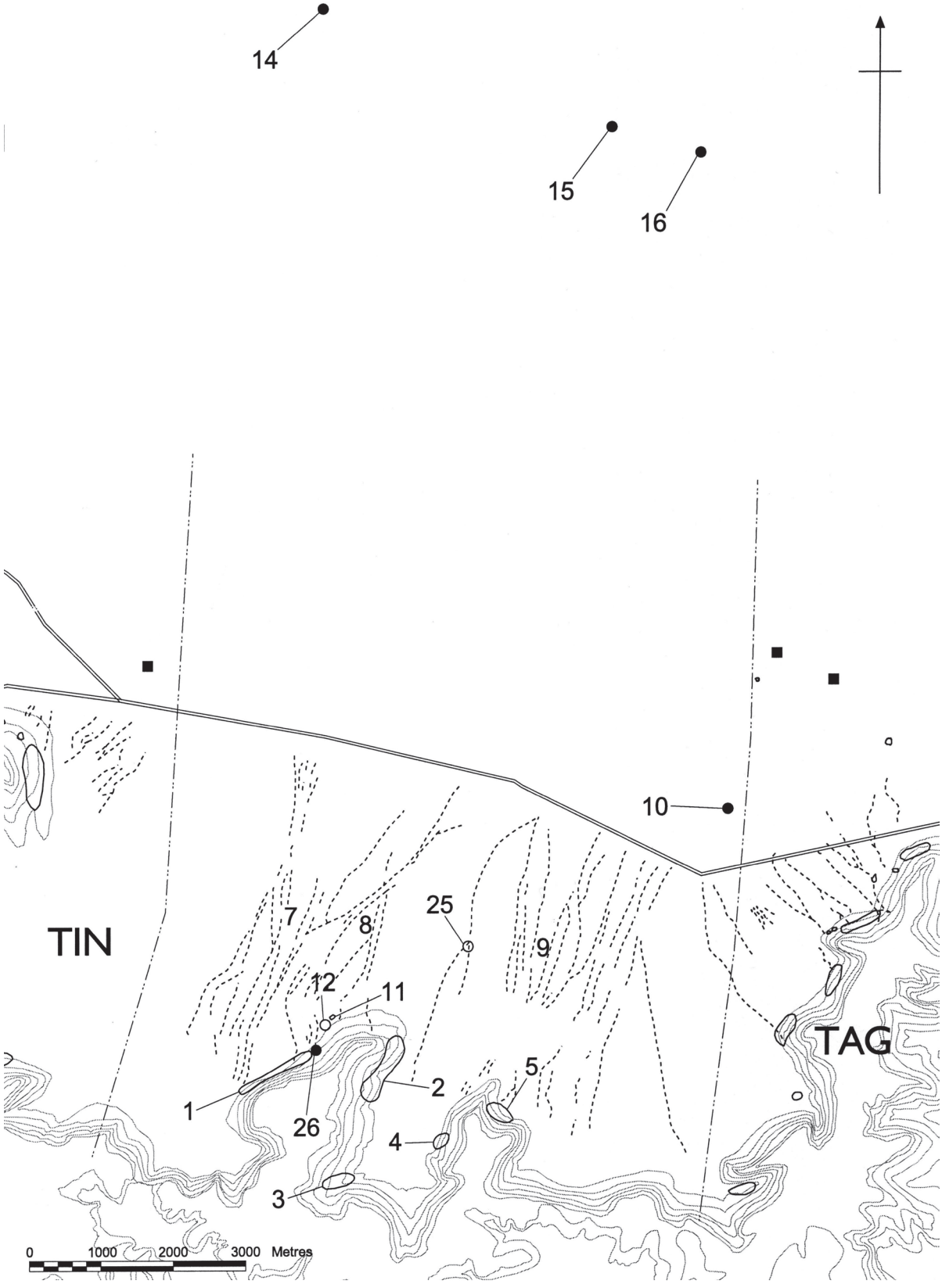


Figure 5.1. Map of sites in ad-Dīsa sector (CMD/FP).

The ad-Dīsa area falls between the Tinda and Tāqallit headlands. The small village of ad-Dīsa is a relatively modern foundation, dependent on Ubārī (Scarin 1937b, 626). CMD's early reconnaissance did not explore the Wādī centre in this area, neither was the escarpment edge in the deep embayment between Tinda and Tāqallit explored on the ground. Two cairn-covered graves were excavated in the vicinity by Caputo but their exact location is uncertain – perhaps EDS 001 or 011 on the approach from Ubārī. These appear to have contained only a few fragmentary bones (Pace *et al.* 1951, 384). The Italian survey estimated a total of 4,300 graves between Tāqallit and Tinda, and the density of graves visible on the aerial photographs in this area suggest such a total may be reasonably accurate. In the late 1950s, AP coverage shows that the village and surrounding farms, formed a dispersed settlement, with more barren areas to W and E.

A brief visit was made to the W headland on the ad-Dīsa escarpment in 2000, recording further details of the *foggara* systems and the spread of cairns on its W side. Sites with FP2000-03 and 2000-04 identifiers were recorded by linewalking in the 2000 season.
***Ills: AF 1*, 243; *AF 2,* Fig. 5.1.**

EDS 001 Cemetery 26°31.20/12°48.50
Large dispersed cairnfield extending *c.*1.5km of NW-facing lower slopes. Estimated minimum of 200-250 cairns, some forming little groups. Not surveyed by CMD. Visit in 2000 confirmed morphology as Type 2 layout and revealed amorphous circular cairns, with examples of 'proto-stele' on W and E sides of tombs. No surface pottery noted. [2000]. ***PUGAR?***

EDS 002 Cemetery 26°31.20/12°49.40
Dispersed cairn-field at NE end of promontory. Estimated 150-200 cairns in three main groups. Identified from APs only. ***LPAST? GAR?***

EDS 003 Cemetery 26°30.40/12°49.10
Poorly-defined small cemetery of *c.*20-30 cairns. Identified from APs only and requires confirmation. ***LPAST? GAR?***

EDS 004 Cemetery 26°30.90/12°49.90
Possible small group of *c.*20 small cairns. Identified from APs only and would require confirmation. ***LPAST? GAR?***

EDS 005 Cemetery 26°31.00/12°50.30
Dispersed group of *c.*50-70 cairns on NE facing slopes. Identified from APs only. ***LPAST? GAR?***

EDS 007 Foggara group 26°31.80/12°48.60
A group of probably nine foggara channels running from close to the escarpment edge to near the old Jarma-Ubārī roadline. Due to the distance from the escarpment to the central Wādī floor some of the channels are unusually long, the longest examples extending over at least 4.5km. With the exception of one, all are running near N-S, the exception bears to the NE towards the foggara group EDS 008. The lower ends of the channels appear quite tightly clustered, concentrated in an area 500-750m wide. ***GAR***
***Ills: AF 1*, 243.**

EDS 008 Foggara group 26°31.8/12°49.11
A discrete group of 6-7 channels, apparently serving an area *c.*1km further E than the EDS 007 group. The channels measure *c.*3.5-4.5km in length. Ground survey (1/2000) found several shafts still open and some exceptionally well-preserved foggara lines. One foggara had access shafts cut directly into bedrock in its upper reaches; opposed footholds were visible in the sides of the shaft (at 26º31.6/12º49.05). In some cases, spoil heaps from shaft excavation were banked up against the sides of cairn tombs (at the E end of cemetery EDS 001), and clearly post-date them. **CGAR**
***Ills: AF 1*, 243.**

EDS 009 Foggara group 26°31.80/12°51.00
Group of *c.*15 channels serving a relatively broad area *c.*2km wide. Running approximately N-S, the longest channels are up to 4km in length, although much of the S course of the central group of channels is not visible on the surface, but some are well-defined at the escarpment base. On one of the more E of these foggaras, a single grave of Islamic type overlay the spoil bank (see EDS 025). [2000]. ***GAR [ISLAM]***
***Ills: AF 1*, 243, 247.**

EDS 010 Settlement? 26°32.84/12°51.95
Spread of occupation debris with traces of mudbrick walls, close to the old road Jarma-Ubārī road. Surface sherds Islamic including coastal imports. [2000]. **ISLAM, EMOD**

EDS 011 Cemetery, rock art 26°31.75/12°49.27
Small dispersed Type 2 cemetery of 25-30 cairns on lower escarpment slopes. Most tombs of circular 'drum' form (types 3a/b), *c.*3m diameter; robbed. One well-preserved type 3b drum tomb had an 'offering space' defined by two side slabs, set vertically against its E side. A single carved footprint was noted on exposed sandstone slabs on a gully above the cemetery. [2000]. ***PUGAR? CGAR? [GAR-EMOD]***

EDS 012 Antenna tombs, cairn 26°31.74/12°49.14
Located on lower escarpment slopes, below main cairnfield. Two antenna tombs, oriented to E, with a further large low stone cairn, probably prehistoric [2000]. ***LPAST***

Figure 5.2. EDS 025 (Islamic?) grave over foggara mound (photo: FP 2000).

Figure 5.3. Inscriptions by entrance to cave EDS 026 (photo: FP 2000).

EDS 014 Lithics scatter 26°39.23/12°48.98
Holocene stone knife, flakes, broken blades, débitage and shattered fragments on deflated gravels at margins of palaeolake. (FP2000-03.4) [2000]. **PAST**

EDS 015 Lithics scatter 26°38.34/12°51.15
Primarily Holocene lithics scatter with flakes, cores, points (including a tanged blade), other retouched pieces (scrapers?) and ostrich eggshell fragments on deflated sand at margins (FP2000-03.5) [2000]. **PAL, PAST**

EDS 016 Lithics scatter 26°38.15/12°51.81
Holocene lithics scatter (*c.*100 x 20m) with flakes and blades on deflated margins of palaeolake. (FP2000-03.6) [2000]. **PAST**

EDS 025 Grave 26°32.10/12°50.21
Grave of Islamic type, with stone edging, overlying a filled-in shaft of a foggara in the EDS 009 group. The grave clearly post-dates the abandonment of the foggara. [2000]. ***ISLAM-EMOD***
***Ills: AF 2,* Fig. 5.2.**

EDS 026 Inscriptions, cave 26°31.59/12°49.04
Small cave (*c.*1.5 x 1.5m internally) with Libyan inscriptions carved either side of the entrance, and also inside. [2000]. ***GAR-EMOD***
***Ills: AF 1*, 319; *AF 2,* Fig. 5.3.**

SECTION 6. TĀQALLIT [TAGLIT] (TAG)

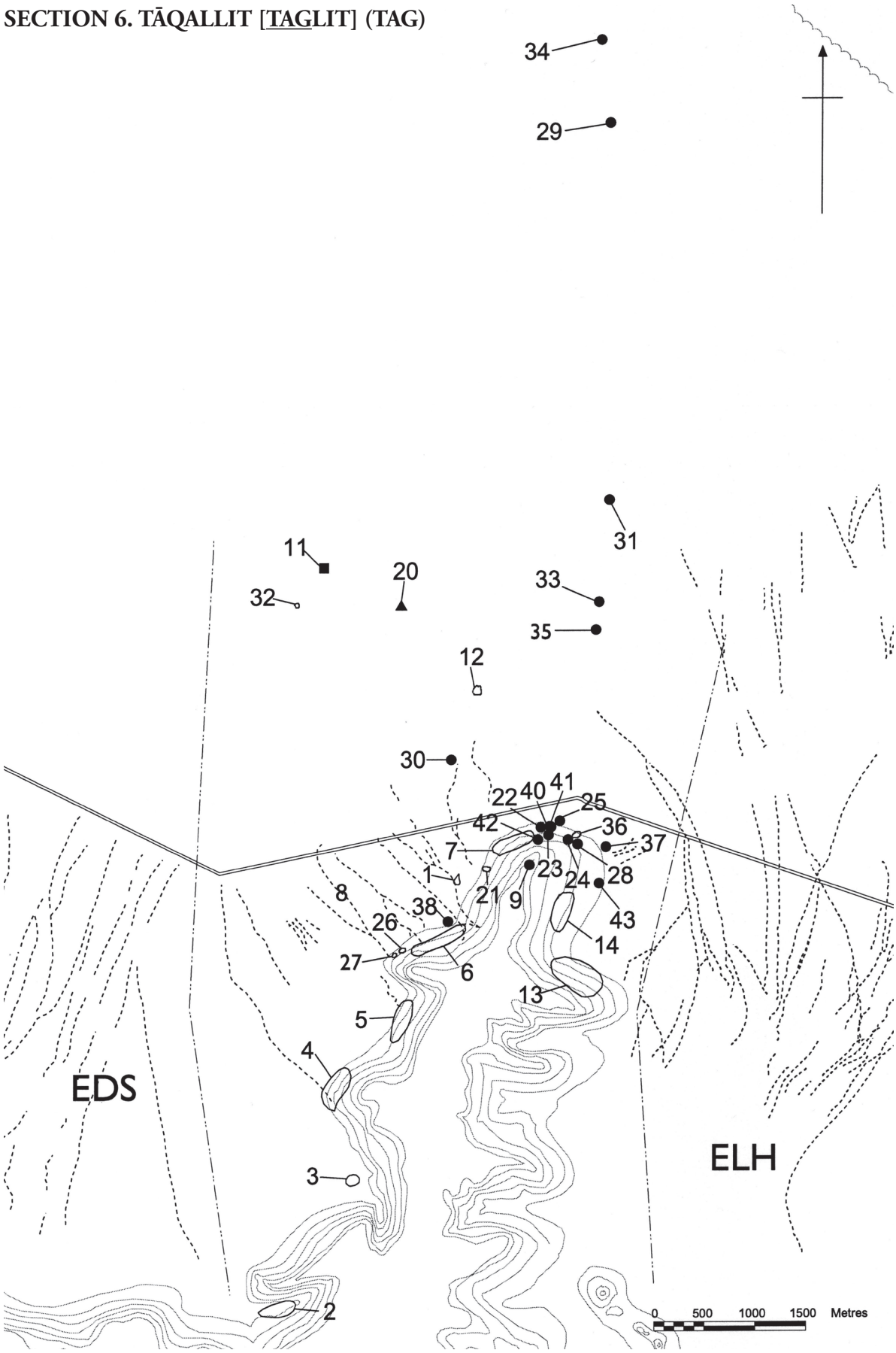


Figure 6.1. Map of sites in Tāqallit sector (CMD/FP).

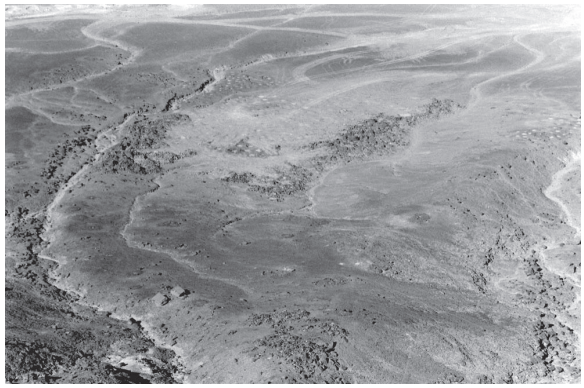


Figure 6.2. TAG 001, general view looking SW over cemetery, showing damage by modern stone robbing to the central area (photo: FP 2000).

The Tāqallit (or Tāglit) area relates to a prominent headland and the Wādī centre to the N. There are no Islamic or early modern villages in this area (Scarin 1937b, 626). The area was first visited by CMD in 1958 when the large cemetery with stepped tombs, previously tested by Caputo (Pace *et al.* 1951, 381-84) was re-examined. Ground survey in that, and following seasons was restricted to the headland proper, close to TAG 001. The headland peak was also examined and its rock art noted (TAG 009). No systematic survey was carried out in the Wādī centre, although one further pyramid cemetery (TAG 012) was identified during a traverse of the area in 1963. During the 1950s and 1960s, this area seems to have been largely barren and uninhabited, although several areas of palm groves and vegetation indicated possible earlier foci of settlement and cultivation.

Several wadi-centre sites were identified by CMD on the AP coverage. These however, were only checked on the ground during the 2000 season, by which time a large irrigated agricultural scheme had been developed over substantial areas of the Wādī centre. Nonetheless, additional Garamantian settlements and pyramid cemeteries were recognised, though others are now obscured. It seems clear that the area had much in common with the pattern of wadi-centre settlements and cemeteries recorded E of the Tāqallit headland in the al-Ḥaṭīya district (see next section, below) The Tāqallit headland (Fig. 6.15) was also resurveyed in 2000 and systematic recording of the numerous rock art sites was begun (*AF 1*, 309-13 for a discussion of the Tāqallit sites). The large cemetery at TAG 001 was also found to have been seriously damaged by stone quarrying and bulldozing and a full survey of what remained of the site was carried out. Sites with FP2000-01 identifiers were recorded by line-walking in 2000.

***Ills: AF 1*, 243; *AF 2,* Fig. 6.1.**

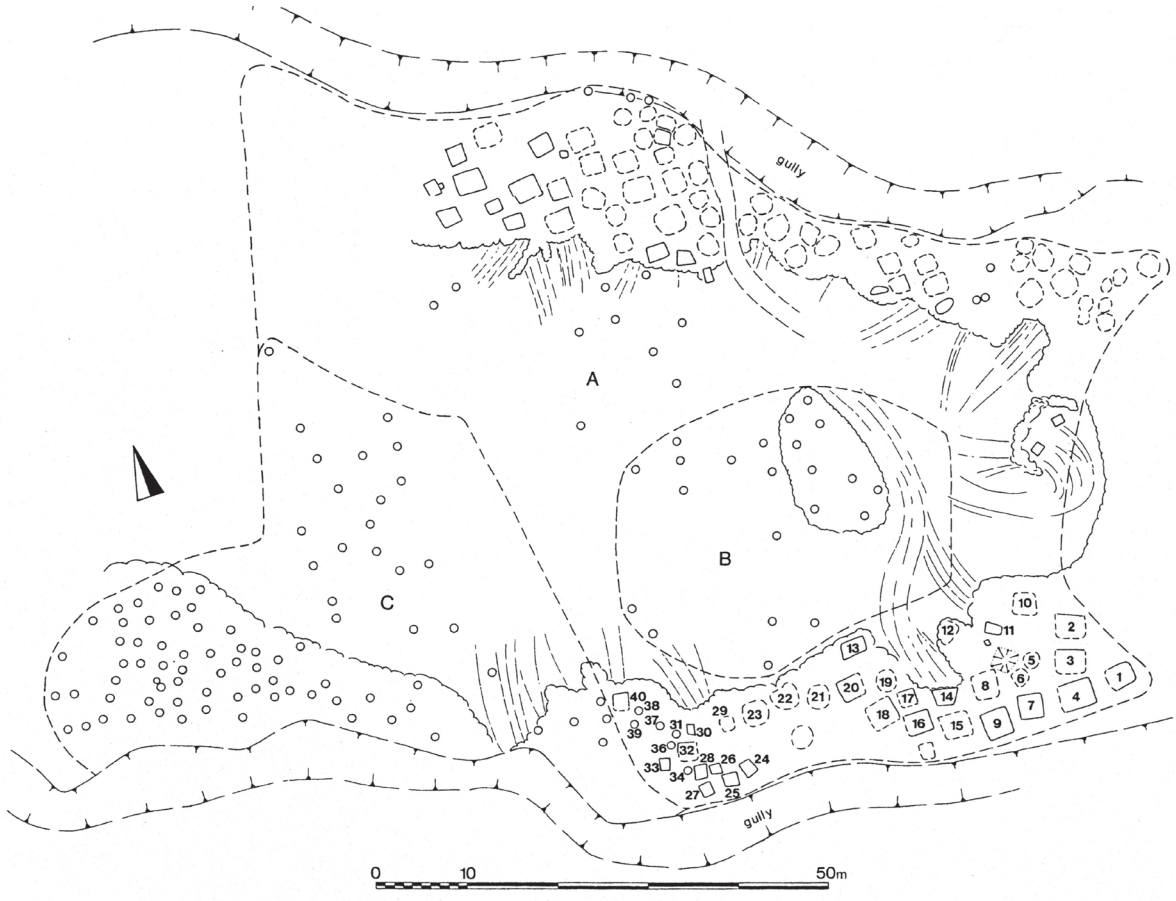


Figure 6.3. TAG 001, detailed survey of cemetery TAG 001 (FP 2000).

Figure 6.4. TAG 001, damage to stepped tombs caused by modern stone robbing (photo: FP 2000).

Figure 6.5. TAG 001, the best-preserved stepped tombs (photo: FP 2000).

TAG 001 Cemetery, inscriptions 26°32.24/12°53.24

A large Type 3 nucleated cemetery *c.*400m SW of the spur called Tāqallit, clear of the escarpment but close enough to be within two arms of a small, crescent-like bay. It lies on the W side of a low ridge crossed by the seasonal water-courses but free from the foggaras. The cemetery measures some 130 x 130m at maximum. Caputo excavated a couple of burials here in the 1930s (Pace *et al.* 1951, 381-84). A dossier on the Tāqallit cemetery was prepared by CMD in 1959 and this, and other additional material relating to the site will form a report in *AF 3*. There were *c.*150 upstanding tombs with round or rectangular superstructures (types 3b and 4b), many stepped (types 5a and 5b). The rest of the cemetery comprised a large number, possibly 150-200, type 2a shaft graves without superstructures. These latter formed two groups, one large area on the W side of the cemetery, the other an area completely encircled by monumental tombs. Many variants of type 4 offering tables were found beside both types of burial and so were fragments of stele (primarily variants of type 4), although noticeably fewer were found amongst the graves in the W group than elsewhere. The site was first recorded by Caputo who excavated graves in the E part of the site, recovering some late Roman pottery from one of them (Pace *et al.* 1951, 381-84). CMD visited the site in 1959, making surface collections and test-excavating three graves. In 2000, a new survey of the cemetery was made, but by this time substantial areas of the site had been destroyed by bulldozing. Little pottery was collected from the site, though the sherd collections included material which ranged from *c.*1st-6th century AD. [1959, 1963, 1972, 2000]. **CGAR, LGAR, PUGAR, *GAR-EMOD***
***Ills: AF 1*, 199, 211, 320-22; *AF 2,* Figs 6.2-6.5.**

Figure 6.6. Cairn of cemetery TAG 004, overlying spoil of one of TAG 008 foggaras (photo: FP 2000).

TAG 002 Cemetery 26°30.50/12°51.90

Dispersed cairnfield consisting of several distinct clusters on lower slopes below escarpment. Estimated up to 100 units. Identified on APs only. ***LPAST? GAR?***

TAG 003 Cemetery 26°31.00/12°52.38

Dispersed cairnfield on W-facing lower slopes below escarpment. Estimated 20-30 units. Identified on APs only. ***LPAST? GAR?***

TAG 004 Cemetery 26°31.70/12°52.38

Dispersed cairnfield on NW and N-facing lower slopes below escarpment. Estimated 150-200 units. Not surveyed on ground. ***LPAST? GAR?***
***Ills: AF 2,* Fig. 6.6.**

TAG 005 Cemetery 26°31.90/12°52.62

Dispersed cairnfield on W-facing lower slopes below escarpment. Estimated 200-250 units. Not surveyed on ground. ***LPAST? GAR?***

TAG 006 Cemetery 26°32.55/12°53.16

Dispersed cairnfield on NW-facing lower slopes below escarpment, SW of TAG 001. Estimated 100+ units with some dense clusters (Type 2 cemetery). Recorded from APs but not surveyed by CMD. Ground survey in 2000 recorded type 1 cairns and variable tomb forms, including circular 'drum' superstructures (types 3a/b, 5a/d), with examples of simple slab stele on E sides of tombs. Largest tombs D: *c.*6m, and 1.5m high. Westernmost tombs extend to area around TAG 026-27.

Foggara channels of TAG 008 run through the cemetery and examples of cairns largely destroyed by foggara

Figure 6.7. TAG 006, dispersed cemetery, looking SW (photo: FP 2000).

Figure 6.8. TAG 006, drum cairn with slab stele on E side (photo: FP 2000).

Figure 6.9. TAG 006, drum cairn with large slab stele on E side (photo: FP 2000).

Figure 6.10. Oval drum cairn of cemetery TAG 006 built over TAG 008 foggara spoil ring (photo: FP 2000).

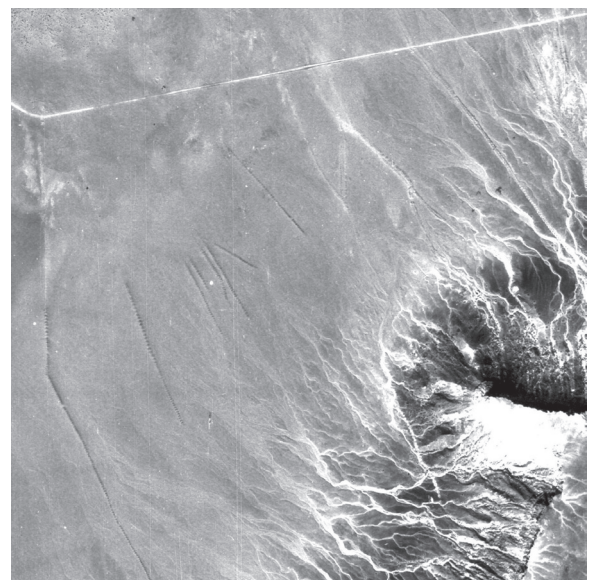


Figure 6.11. Air-photograph of TAG 008 – foggaras to W of Tāqallit headland (N at top).

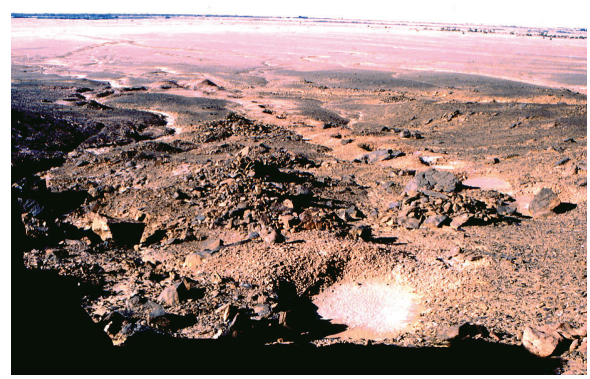


Figure 6.12. Silt-filled shaft of one of foggara lines of TAG 008 (photo: FP 2000).

wells were noted. Other examples seem to postdate the foggara, with a stepped tomb overlying a foggara shaft at 26°32.55/12°53.25 and a round cairn overlying a foggara shaft/spoilheap at 26°32.54/ 12°53.2 (see below). Surface sherds include 'late Punic' imports. [2000], **PUGAR, CGAR**
***Ills: AF 1*, 206, 214; *AF 2*, Figs 6.7-6.10.**

TAG 007 Cemetery 26°32.90/12°53.41
Dispersed Type 2 cairnfield NE of TAG 001 towards end of spur. Estimated 100-150 units scattered up hillside but one linear cluster of 5-6 conjoining tombs. An offering table and several 'protostele' of large stone slabs noted. Little surface pottery. Variable type 1 cairn forms, including small mound cairns over stone-lined cists, as well as larger type 3a 'drum' cairns with covering of small stones. (= CMD TAG cemetery 2). [2000]. ***PUGAR***

Figure 6.13. Transcription of Libyan inscription on rock by first TAG 008 foggara shaft (FP 2000).

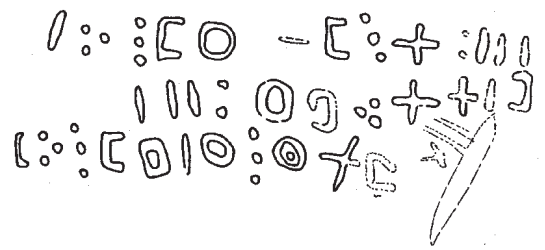


Figure 6.14. Transcription of Libyan inscription on rock by second TAG 008 foggara shaft (FP 2000).

TAG 008 Foggara group 26°32.50/12°53.20

A group of *c.*15 foggaras spread over *c.*2 km, oriented chiefly SE/NW, running out from NW side of the Tāqallit spur. The extant channels are 1.25-1.5km long, although the trace of several is only partly visible and most of them may originally have continued somewhat further to the NW into an area that is masked by blown sand. The foggaras originate at the foot of the escarpment, cutting through cemeteries. The two most E of this group run into areas of old palms and vegetation, much covered in sand, and this may represent the former zone of emergence of these foggaras, SW of TAG 012. The most E foggara of the group appears to deviate to avoid a suspected Garamantian settlement site TAG 030. The more W foggaras of the group run out towards a grey salty area (former lake deposits or evaporated irrigation areas?). Six foggaras here were recorded in detail during 2000: **F200 and F207** tap into an unusual feeder system (F201, F202) that extends a considerable distance up two small gullies, with exceptionally deep rock-cut shafts (up to *c.*40m). It is probable that there is a sequence of features here. F207 looks the earlier of the two, perhaps with its supply then augmented by the broad V-shaped feeder system, into which F200 may later have tapped. F200 lies to the W of cemetery TAG 001, departing from feeder F201 in the bottom of a deep erosion gully within the piled stone cairn and drum tomb cemetery TAG 006. Almost immediately (at 26°32.54/12°53.22) the foggara tunnels under a spur. At the top of the spur on a large rock forming part of a spoil ring around a shaft is a Libyan inscription.

The shafts of the upper part of this foggara are very deep – in excess of 30m. To the NW, the ground slopes away quite steeply at first to a flatter area where the upcast spoil

Figure 6.15. The Tāqallit headland looking S. There are concentrations of rock art both on the top of the plateau and at various points around the base at the N tip (photo: FP 2000).

mounds are of blue-grey clay, with shafts 9-10m apart. Some shafts are still open; four were measured as 4, 5, 6, and 10m deep to fill.

The E feeder **F201** of foggaras F200 and F207 originates in the same gully as F200, but much higher up it at 26°32.53/12°53.21. The initial stretch of this foggara also runs through the TAG 006 cairnfield. At 26°32.55/12°53.25 an oval stepped tomb appears to have been cut into the spoil mound of a shaft. A short distance further to the NW a drum cairn possibly overlies the spoil bank of another shaft at point 26°32.54/12°53.20. The western tributary **F202** joins this foggara at point 26°32.53/12°53.17. This also runs through the TAG 006 cemetery. The mother well is at 26°32.43/12°53.15. The first shaft to the N is cut between two tombs, and its spoil overlies them. At 26°32.51/12°53.15 a large rock with several Libyan inscriptions forms the edge of an access shaft. At 26°32.52/12°53.17 is another tomb between two foggara shafts, covered by spoil.

Foggara **F207** is similar in construction to F200, though it follows a natural watershed between two gullies, whereas F200 cuts diagonally across gullies and the slope to reach the feeder channel F201. It appears that F207 was the primary foggara here and that F200 is a secondary addition. A short distance to the S lies **F203**, a complex network of foggaras with at least two main tributaries, and another partially visible between them. Near the mother well on the E tributary is a tomb overlain by a

spoil mound from the foggara. At 26°32.51/12°52.90 two well-defined shafts on the E tributary are cut through rock, one 5.5m deep with opposed footholds in the sides. Two minor tributaries on the E tributary join at point 26°32.50/12°52.89. Here there are elongated collapsed spoil rings around the shafts, and at one point there is a kind of double shaft. **F204** The first few shafts of this foggara climb very steeply up the escarpment base and must have been very deep. By **F205** there is a tomb with foggara spoil upcast against it, and Libyan inscriptions on large rocks (26°32.25/12°52.77) nearby.

F206 is located to SW of the W spur of Tāqallit promontory, with light grey spoil mounds and V-shaped tributaries. There are well-built drum cairns of TAG 006 nearby. At the start of the E tributary a tomb seems to overlie the upcast of a foggara spoil ring.

This group of foggaras is of singular importance for several reasons. There is clear evidence of a sequence of development here (especially in the F200-202, 207 complex), in several places foggara spoil appears to overlie simple piled stone cairns, but in at least four instances there are indications of drum cairns being constructed over spoil banks. The relative lack of imported pottery in this cemetery and the dating of the few diagnostics found suggests a date in the latter centuries BC for the dispersed drum cairns, while the piled stone cairns remain undated. This would appear to provide the clearest indication thus far of the construction of foggaras in Fazzān as early as the 1st millennium BC. Excavation of one or more of the tombs that appear to overlie the foggaras is highly desirable to obtain greater dating precision. [2002]. **PUGAR, CGAR**

***Ills: AF 1*, 243, 247, 249, 252, 257 (mislabelled TAG 3), 262, 264, 322; *AF 2*, Figs 6.10-6.14.**

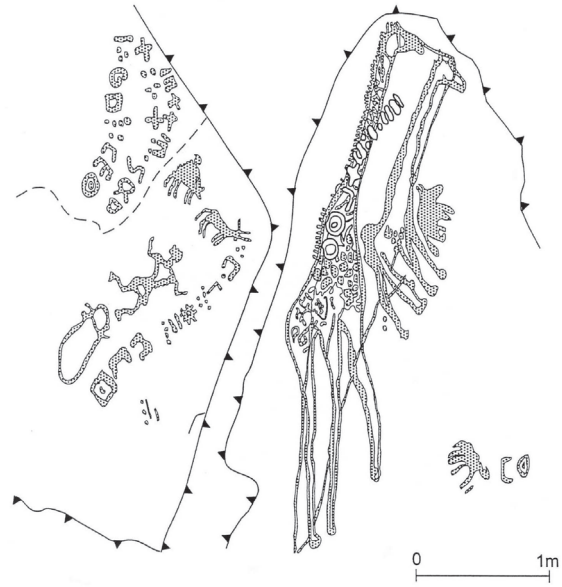


Figure 6.16. TAG 009, tracing of main rock art scenes from top of the Tāqallit headland, TAG 009 (FP 2000).

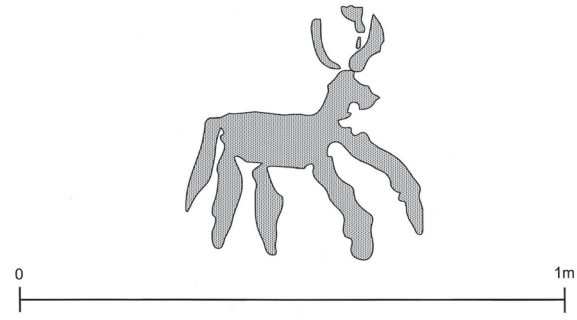


Figure 6.17. TAG 009, tracing of a pecked image of a bovine with long horns (FP 2000).

TAG 009 Rock art, inscriptions 26°32.85/12°53.58

A small group of engravings at very end of the promontory, facing to the E with extensive views over the Wādī and along the hamada. These were located directly above the engravings on the lower slopes and in the valley. The main figures here were two semi-naturalistic, pecked giraffe superimposed over a third one. Other images included two goats, a camel and rider (possibly hunting goats?), a a 'dancing Garamatian', a Libyan inscription, 'footprints', a horse and rider and an ostrich. On a separate rock nearby was an isolated image of a goat. The rock art was very much confined to this small area and may be ascribed to Phases II, III and IV. [1972, 2000]. ***PAST, GAR, GAR-EMOD***

***Ills: AF 1*, 294, 307, 312, 318, back cover; *AF 2*, Figs 6.15-6.17.**

TAG 011 *Qasr*, enclosed settlement 26°34.39/12°52.56

Qasr structure identified by CMD on APs, but not located on ground until 2000 season, now situated within a modern irrigation scheme. The central *qasr* is surrounded by a series of enclosure walls (the outer one normally being *c.*1m thick and internal divisions *c.*50 cm) and other mudbrick buildings, *c.*175m (NS) x 150m (EW). Much of the site is masked by drifting sand. The *qasr* is built of flat brownish mudbricks, *c.*53x37x6 cm, laid as headers and stretchers in a whitish mud mortar, rich in white chippings. Measuring *c.*18 x 18m it has subcircular projecting corner towers and an entrance through a rectangular tower in its E side. The *qasr* walls stand *c.*2m high and are *c.*1m wide. No details could be made out of internal structures. Few traces of external buildings were well-defined because of the drifting sand, but there were certainly mudbrick buildings near the SW corner of the *qasr* and facing its entrance against the outer E enclosure wall. The outer enclosure was subdivided into three main zones, with all walls being more or less parallel or perpendicular to those of the *qasr*: a) W of the *qasr* a large rectangular area measuring *c.*90 x 140m; b) a rectangular area around and to the E of the *qasr c.*60 x 115m; c) a rectangular area NE of the *qasr c.*75 x 65m. While the relatively good preservation of the standing

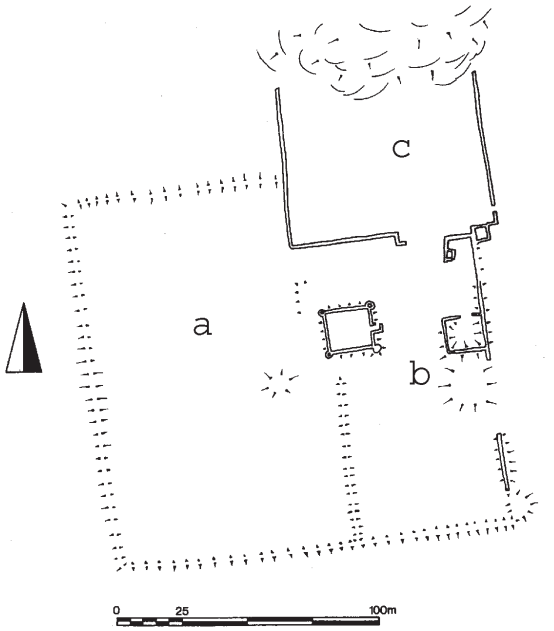


Figure 6.18. Plan of qasr *TAG 011, associated settlement and enclosures (FP 2000).*

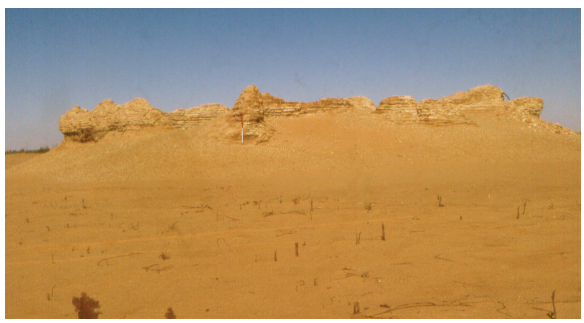


Figure 6.19. View of eroded walls of qasr *TAG 011 (photo: FP 2000).*

remains suggested the site may be medieval or later, the presence of amphorae and other Roman wheelmade pottery indicates some Garamantian activity here. An AMS date (2055±70BP) on charcoal incorporated in the walls of the *qasr*, suggests a date for the sample between the 4th century BC-1st century AD. [2000]. **CGAR**
***Ills: AF 1*, 148; *AF 2*, Figs 6.18-6.19.**

TAG 012 Cemetery (pyramid) 26°33.80/12°53.35
Wādī floor cemetery with *c.*60 tombs, including mudbrick pyramid tombs, of which two were still standing to >2m height when CMD located and photographed the site in 1963 (Daniels 1971a, 267). Most of the tombs are now only recognisable as squarish patches of mudbrick at the surface (varying from *c.*1 x 1m to 4 x 4m), so it is not certain how many were originally of pyramid form as opposed to type 4b/5b quadrangular tombs. A few of the patches have a circular form, suggesting the possible presence of type 3b tombs. There are elements of linearity

Figure 6.20. TAG 012, pyramid cemetery, looking SW (photo: CMD 1963).

Figure 6.21. TAG 012, same view as Fig. 6.20, now much reduced) (photo: FP 2000).

in the layout, identifying this as a Type 7 cemetery. The site was relocated in 2000 and surveyed. No associated settlement has been identified, though there is a modern agricultural project in the area immediately N and NW. Little surface pottery, small quantities imports, *c.*1st-2nd century AD) [1963, 2000]. **CGAR**
***Ills: AF 2*, Figs 6.20-6.23.**

TAG 013 Cemetery 26°32.10/12°53.76
Dispersed cairnfield spread over *c.*1km of the E side of the Tāqallit spur. Estimated 200-250 tombs. Continuation of TAG 007 and TAG 014? Identified on APs only. ***PUGAR***

TAG 014 Cemetery 26°32.50/12°54.12
Dispersed Type 2 cairnfield spread over *c.*0.5km of NE-facing slope on E side of the Tāqallit spur. Estimated 100 tombs. Continuation of TAG 013? Revisited 2000. Variable type 1 cairn forms, as well as some large flat-topped type 3b cylindrical tombs. Some examples of stone slabs and type 2 stone offering bowls (W-facing) and type 1 protostele (E-facing). Surface pottery very rare, includes 'late Punic' imports. [2000]. **PUGAR, LGAR**

TAG 020 Enclosed settlement 26°34.01/12°53.31
A small settlement site, *c.*26 (N-S) x 21m (E-W), defined by a roughly rectangular enclosure. The enclosure wall (*c.*40-50cm thick) is clearest on the E and N sides, where

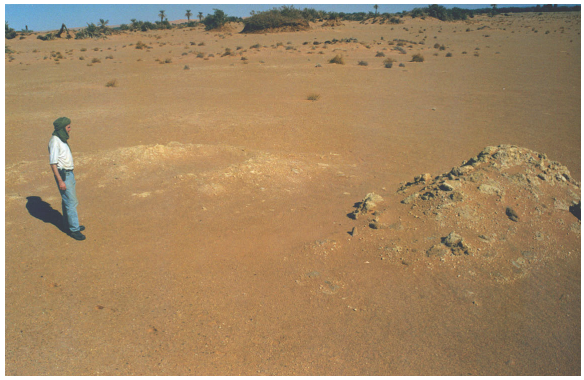


Figure 6.22. TAG 012, showing outlines of pyramids or rectangular mudbrick tombs visible at surface (photo: FP 2000).

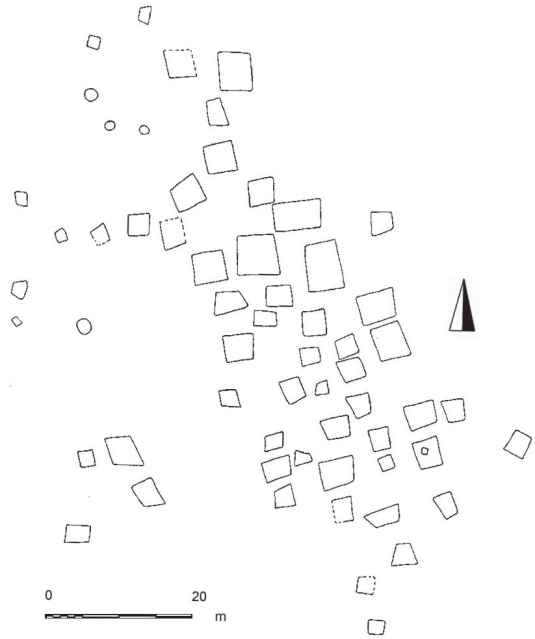


Figure 6.23. TAG 012, plan of surface traces of pyramids and rectangular mudbrick tombs (FP 2000).

it stands up to 1.50-2m high (though partially obscured by sand embanked on either side). There is a probable entrance in the W side of the enclosure and the height of the ground inside the enclosure indicates structures within the NW and SW angles of the wall. The latter projects across the line of the presumed S return of the enclosure wall and may indicate further structures below the two prominent 'spring mounds' that impinge on the SW and SE corners of the enclosure. Rare sherds amongst the drifting sand on the N side of the site and a complete pot to the SE. [2000]. **CGAR [EMOD]**
***Ills: AF 2*, Fig. 6.24.**

TAG 021 Cemetery 26°32.77/12°53.32
Small Type 2 cemetery with *c.*40 graves. Rough subcircular type 1 cairns, some clustered in small groups. Robbed examples show burials in small stone-lined cists 1m

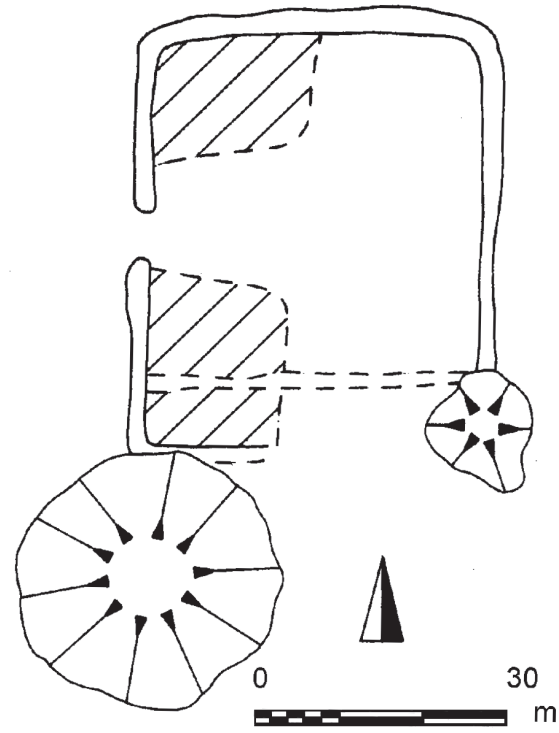


Figure 6.24. TAG 020, plan of enclosed settlement (FP 2000).

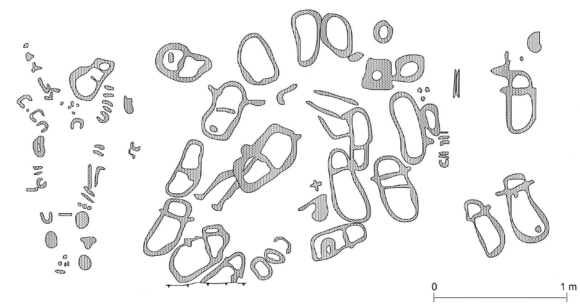


Figure 6.25. TAG 022, engravings of feet/sandals and Libyan inscriptions (photo: FP 2000).

Figure 6.26. TAG 022, engravings of giraffes on isolated boulder (photo: FP 2000).

Figure 6.27. TAG 023, hunting scene (engraved camels, ostriches, goats and Libyan inscriptions) (photo: FP 2000).

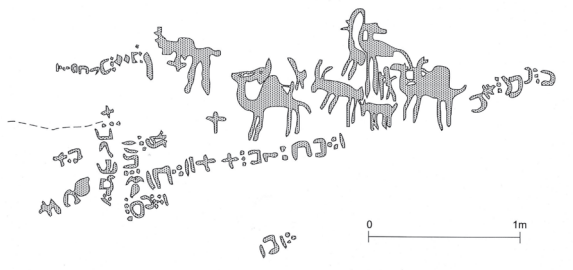


Figure 6.28. TAG 023, tracing of hunting scene (FP 2000).

square. Fragments of stele and one offering table, all on E side of tombs. Small quantities of 'late Punic' pottery on surface. [2000]. **PUGAR**

TAG 022 Rock art, inscriptions 26°32.99/12°53.51

Area of large boulders in a rock-strewn gully below the promontory. A number of these have good Libyan inscriptions over several surfaces, and one is almost entirely covered in incised feet. These are superimposed over a very eroded Phase III giraffe. All other engravings in this area appear to be Phase IV. [2000]. ***PAST, GAR-EMOD***

***Ills: AF 1*, 301, 307, 310; *AF 2*, Figs 6.25-6.26.**

TAG 023 Rock art, inscriptions 26°32.98/12°53.60

A cluster of inscriptions and rock art located on large, detached boulders further upslope from TAG 022. These included Phase IV engravings of camels and horses with riders hunting goats and other (wild?) animals. Libyan inscriptions were often on associated with these images. [2000]. ***GAR-EMOD***

***Ills: AF 1*, 287, 298, 307, 310-11; *AF 2*, Figs 6.27-6.28.**

TAG 024 Rock art 26°32.80/12°53.76

Cluster of engravings and inscriptions on rock faces and boulders around the base of the escarpment SE of TAG 023, including one area of large boulders that had been

Figure 6.29. TAG 024, engravings of bovines on isolated boulder (photo: FP 2000).

Figure 6.30. TAG 024, further engravings of giraffes on isolated boulders (photo: FP 2000).

bulldozed and broken up. Images included naturalistic and semi-schematic pecked and incised animals (Phases I and II). A group of large, detached boulders with engravings of giraffe and a large Phase I bovid had recently been broken up and moved by bulldozing. It was now partly hidden on the underside of a large boulder, with giraffe images on two of the other surfaces. [2000]. ***PAST, GAR-EMOD***

***Ills: AF 1*, 307, 310; *AF 2*, Figs 6.29-6.30.**

TAG 025 Rock art, inscriptions 26°33.04/12°53.59

On lower slopes of the promontory terminus, on a series of boulders and eroded sandstone formations dominated by promontory, there were a large number of small incised images and Libyan inscriptions. Rare representative images included 'spears' or 'plants' and an eroded animal. There were several feet, many with Libyan inscriptions inside and around them, including some incised on the flat sandstone bedrock that formed the ground surface around the base of the escarpment. A number of stones had consecutive linear incisions around their edges and several smaller portable stones were also engraved. All camel phase. [2000]. **CGAR, *GAR-EMOD***

***Ills: AF 1*, 307, 311; *AF 2*, Figs 6.31-6.33.**

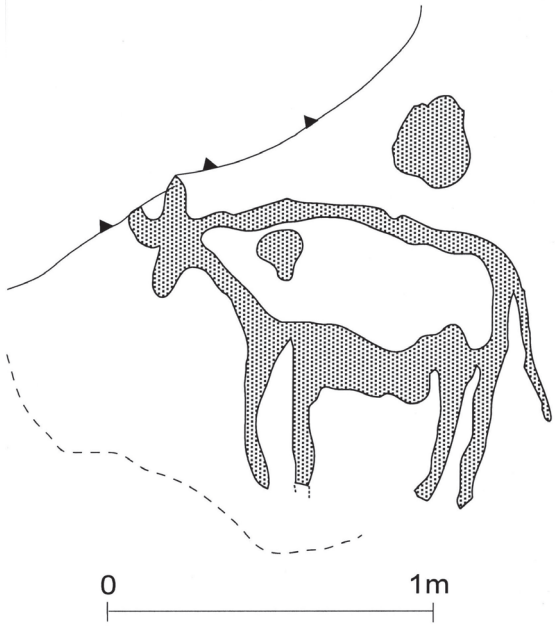


Figure 6.31. TAG 025, tracing of engraved bovine (FP 2000).

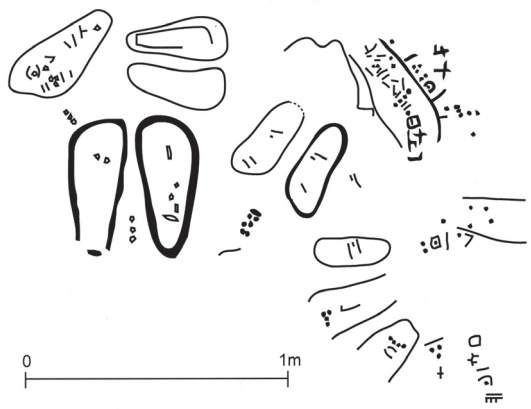


Figure 6.32. TAG 025, tracing of engraved feet/sandals and Libyan inscriptions (FP 2000).

Figure 6.33. TAG 025, engravings of feet/sandals and inscriptions (FP 2000).

Figure 6.34. TAG 027, small nucleated cemetery, looking SW (photo: FP 2000).

TAG 026 Cemetery 26°32.43/12°52.85
Small Type 4 cemetery of tightly clustered small mound cairns on steep rocky hillside. Heavy robbing of tightly packed and often conjoining cairns has left dense spread of rubble *c.*30m across with some cist chambers surviving. The lack of monumental tomb types is striking. Surface spreads of handmade pottery and abundant amphorae sherds, *c.*1st-2nd century AD. [2000]. **CGAR**

TAG 027 Cemetery 26°32.42/12°52.84
Small Type 4 cemetery of tightly clustered small type 1 mound cairns, some with cist chambers exposed by ubiquitous robbing. Surface pottery abundant, amphorae, some ARS, 1st-4th century AD. [2000]. **CGAR**
***Ills: AF 2*, Fig. 6.34.**

TAG 028 Rock art, inscriptions 26°32.80/12°53.82
Group of loose or broken boulders close to TAG 024 on E side. One rock had large depictions of Phase III(?) bovids with possible back coverings and 'discs' between their horns. There were also a number of Libyan inscriptions. [2000]. ***PAST, GAR-EMOD***

TAG 029 Lithics scatter 26°36.84/12°54.03
Pleistocene lithics scatter on sands and gravels. (FP2000-01.2) [2000]. **PAL**

TAG 030 Lithics scatter, settlement? 26°33.41/12°53.21
On the SE fringe of a prominent stand of palm trees, at a point where a foggara makes a turn to the N, a scatter of (mainly) Holocene lithics and of later pottery, including imported Roman wares, suggests an activity or settlement site. There is a slight mound that runs under the edge of the oasis from which most of the finds came, and this could conceal structures, but the presence of vegetation and drifted sand prevented a full examination. Most of the finds came from an area *c.*50 x 100m. [2000]. **[PAL], E-MPAST, PAST, CGAR**
***Ills: AF 2*, Fig. 42.4.**

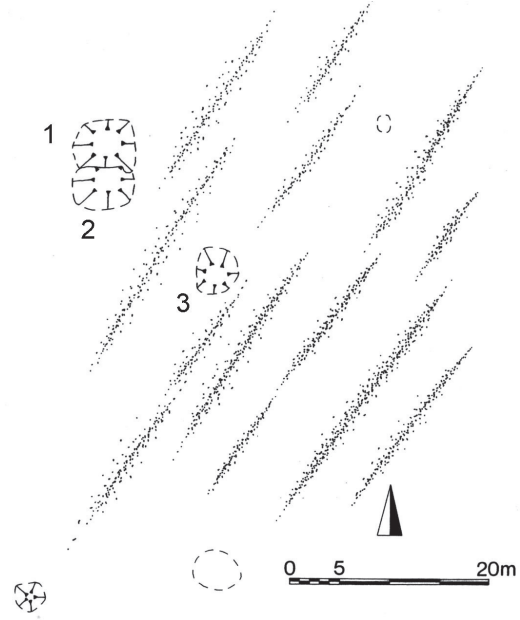


Figure 6.35. TAG 032, sketch plan of possible pyramid cemtery (FP 2000).

Figure 6.36. TAG 042, rock engravings and inscriptions on isolated boulder (photo: FP 2000).

TAG 031 Lithics scatter 26°34.27/12°54.00
Sparse scatter of Holocene lithics on sand and gravels. (FP2000-01.3) [2000]. **PAST**

TAG 032 Cemetery (pyramid?) 26°34.03/12°52.45
Probable cemetery site associated with settlement TAG 011, with mudbrick tomb superstructures, largely masked by sand. The two clearest structures (1-2) are possibly decayed pyramids, surviving as roughly square patches of mudbrick *c.*2.5m across and *c.*50cm high, with spreads of decayed mudbrick *c.*5m in diameter around each. Feature 3 is reduced to a small mound of mudbrick. The other three features are all eroded to ground level, merely patches of decayed mudbrick. Not enough is visible to comment on overall layout. Fragments of imported Roman pottery 1st-2nd century AD, some Pleistocene lithics and grindstones in vicinity. [2000]. **CGAR [PAL]**
***Ills: AF 2*, Fig. 6.35.**

TAG 033 Lithics scatter 26°33.76/12°53.99
Mousterian and Holocene lithics (including some possibly epipalaeolithic material) scatter on sand and gravels. (FP2000-01.4) [2000]. **PAL, PREPAST, PAST**

TAG 034 Lithics scatter 26°37.32/12°54.02
Sparse mix of Pleistocene and Holocene lithics scatter on deflated sand. (FP2000-01.1) [2000]. **PAL, PAST**

TAG 035 Lithics scatter 26°33.61/12°53.99
Sparse Holocene lithics on sand and gravels. (FP2000-01.5) [2000]. **PAST**

TAG 036 Cemetery 26°32.95/12°53.75
Tightly clustered Type 3(?) cemetery of stone tombs almost wholly destroyed by recent bulldozing. One stone offering table was visible. [2000]. ***CGAR***

TAG 037 Lithic artefact 26°32.37/12°54.08
Large Pleistocene biface on sand and gravels. (FP2000-01.6) [2000]. **PAL**

TAG 038 Pottery scatter 26°32.54/12°53.19
Dense scatter of handmade pottery. [2000]. **PUGAR?**

TAG 040 Rock art 26°32.99/12°53.61
Large split boulder in an old stream bed at the base of the promontory. On the downstream face is the clearly pecked Phase IV image of a camel with a man leading it. Possible axe sharpening marks on same rock. [2000]. ***GAR-EMOD***

TAG 041 Rock art 26°32.98/12°53.64
In the same stream bed, on the upstream face of an isolated boulder, there is a pecked image of a large humpless, short-horned bovid, with a spotted hide and a disc above its lower back (Phase III). Pecked animal, possibly goat, on a rock downslope about 20m NW. [2000]. ***PAST, GAR-EMOD***

TAG 042 Rock art, inscription 26°33.00/12°53.70
Close to TAG 041, a boulder with a humpless, short horned bovid with 'saddle' or marking on back. [2000]. ***PAST [GAR-EMOD?]***
***Ills: AF 2*, Fig. 6.36.**

TAG 043 Lithics scatter, occupation? 26°32.83/12°54.07
Mid-Holocene scraper and burin, and thin sherd scatter. [2000]. **MPAST**

SECTION 7. AL-ḤAṬĪYA [EL-HATIYAH] (ELH)

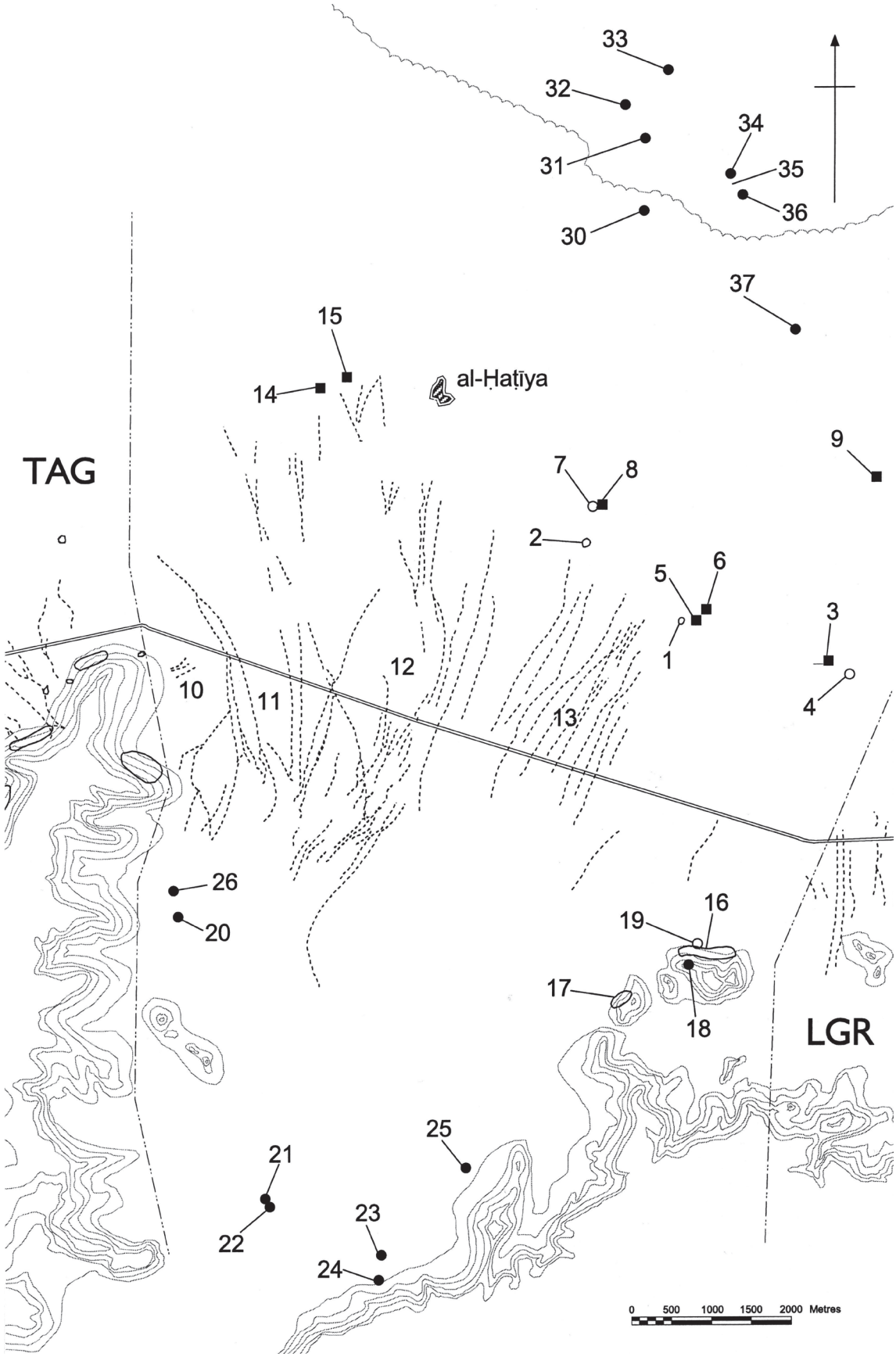


Figure 7.1. Map of sites in al-Ḥaṭīya sector (CMD/FP).

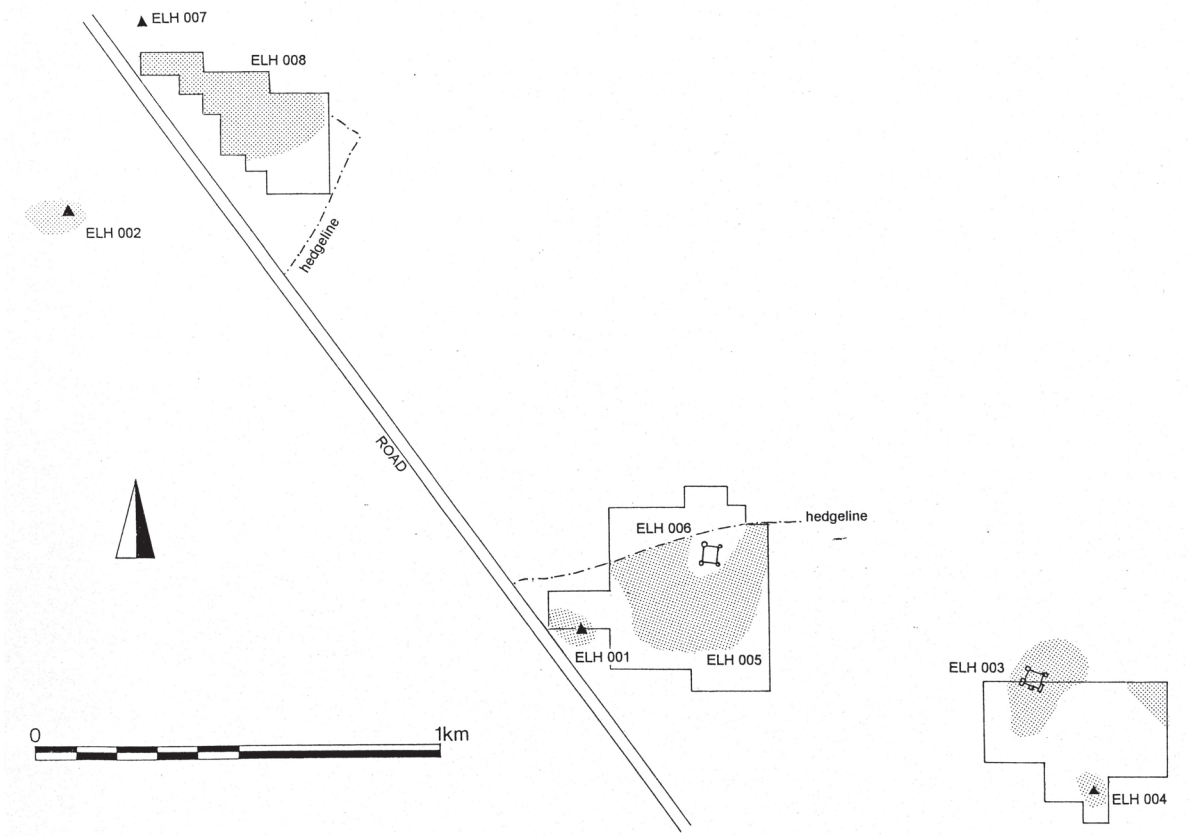


Figure 7.2. Main sites and field survey grid walk areas in the vicinity of previously known pyramid cemeteries ELH 001-002 (FP 1998).

The Wādī centre in the area known as al-Ḥaṭīya, like Tāqallit to the W, is characterised by relatively limited early modern cultivation, with few palms and a thin, but general cover of blown sand. There was one small early-20th-century village at al-Ḥaṭīya (Scarin 1937b, 626 – 262 inhabitants, 150 palm trees), evidently of recent foundation. Satellite imagery shows that the deep embayment to the E of the Tāqallit promontory acts as a wind funnel and blown sand is a much more severe problem in this location than elsewhere in the Wādī. Only in a few places are small farms visible on the 1958 APs and though recent activity has seen some larger agricultural schemes established here, it is by no means on the scale observed elsewhere in the Wādī al-Ḥayāt. The desolate aspect of the landscape is very evident on CMD's photographs taken in the 1960s. On the other hand, a prominent line of large 'spring mounds' run from SE to NW through the area where the settlements are located, indicating that, at least until recently, the water table has been close to the surface.

The area is best known for the well-preserved pyramid cemeteries, ELH 001-002, visited by Daniels in 1959, recorded by him in 1962-63 and fully surveyed by FP in 1998. Previous publication has not brought out the significance of settlement sites associated with these cemeteries, though CMD was aware of their existence. Survey in 1998 (Mattingly *et al.* 1998b, 131-33) included fieldwalking and topographic survey of a sample of these sites (ELH 001-008). These sites lie close to the N end of several groups of foggaras (ELH 010-013) and on the line of old trackways between Jarma and Ubārī/Tinda. In the 1960s the main Jarma to Ubārī road ran due W of al-Ghrayf, passing close by the Tāqallit promontory, but since the 1980s a new tarmac road runs NW from Guerat, the W suburb of al-Ghrayf, and passes between the pyramid cemeteries.

In common with the Tāqallit area to the W, this appears to be a region with intensive oasis settlement that did not continue on the same scale into the Islamic period. The villages, *qsur* and distinctive escarpment and pyramid cemeteries constitute a well-defined local variant on the Garamantian cultural package.

Few archaeological sites have been found on the escarpment edge, which falls away to the S in this area, although no detailed ground survey appears to have been carried out here. Some rock engraving sites have been identified on the escarpment and adjoining hills (e.g. at 'Wādī Bouzna' [ELH 018]), with a further group some 11km SSW of there (Le Quellec 1985a).
***Ills: AF 1*, 111, 123, 243; *AF 2*, Fig. 7.1.**

ELH 001 Cemetery (pyramid) 26°33.00/12°57.71

A short distance to the W of *qasr* ELH 006 lies a group of mudbrick tombs. CMD's original recording identified *c.*30 tombs, of which three had upstanding superstructures,

Figure 7.3. ELH 001, pyramid cemetery, looking S (photo: CMD 1963).

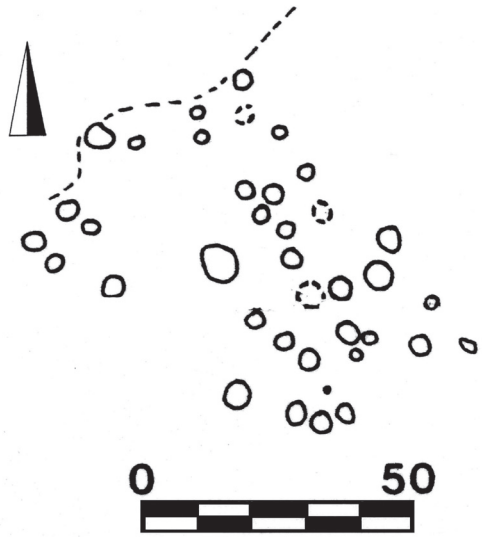


Figure 7.4. ELH 001, plan of mudbrick patches representing the (mainly) decayed pyramids of cemetery (FP 1998).

the rest had been reduced to low mounds of crumbled mudbrick. Erosion of their bases indicated the absence of stone foundations, and this was confirmed during test excavation of one grave. Before digging began it consisted of a low mound of mudbrick 4.1m in diameter. The actual burial shaft was just over 1m square, encased by the remains of a square mudbrick superstructure 6-70cm thick. The excavation was abandoned at a depth of 1.2m, however, as no trace of bone or pottery had materialised, and the shaft was then too narrow for deeper digging. The largest standing tomb was approximately 2 x 2 x 2.5m in height.

Survey of the cemetery in 1998 suggested that there were at least 38 burials, though only the three standing pyramids noted in 1965 are preserved to any notable extent, though somewhat more eroded now. They appear to be of type P1 or P2a (see *AF* 1, 192; below, ELH 002 for explanation). The rest of the tombs were observed as low amorphous mounds of eroded mudbrick and some may have been of quadrangular form (types 4b/5b). The tombs appear to have been arranged in a series of NW-SE lines, making the overall morphology here a Type 7 cemetery. Subsequent to the FP fieldwork, the Libyan Department of Antiquities has carried out some restoration and conservation work on the surviving tombs. The cemetery is linked to settlement ELH 005-006 by a trackway. [1959, 1962-3, 1998]. **CGAR [EMOD]** ***Ills: AF 1*, 111, 123; *AF 2*, Figs 7.2-7.4, 7.22-7.23.**

ELH 002 Cemetery (pyramid) 26°33.56/12°56.94

A large Type 7 cemetery of pyramid and type 4b rectangular burials, all in yellow mudbricks (Ruprechtsberger 1997, 42). The mudbricks are generally *c.*34-36x25-27x6-7cm in size, though a few are up to *c.*52cm long and many bricks are of uneven thickness. The fabric is very sandy with almost no visible organic content, but frequent white chippings. CMD estimated that there were about 70 mudbrick pyramids here, with about 30 still upstanding and the remainder surviving as low mounds of collapsed and eroded mudbrick. Full survey in 1998 revealed an even more extensive cemetery, with a total of 151 burial structures recorded, of which at least 90 were probably of pyramid type, with another 34 assigned to a type of rectangular tomb and 26 further tombs being of uncertain type. Kite air photographs have revealed traces of further small tombs that are invisible in normal light conditions in and around the mapped area. Further burials may be suspected, especially towards the SW where there is an outlying group. Subsequent to the FP fieldwork, the Libyan Department of Antiquities has carried out some restoration and conservation work on the surviving tombs.

The majority of tombs appear to have had pyramid-shaped superstructure, though of varying size – ranging from structures over 2 x 2m square and more than 3m tall, to miniature pyramids *c.*1 x 1m x 1m high. The pyramids seem to be arranged in a series of roughly N-S rows, somewhat disrupted by subsequent infilling of additional structures. The largest pyramids cluster towards the E side of the cemetery. Many of the pyramids have been eroded just above modern ground level, giving them the appearance of being slightly undercut at the base. This is almost certainly due to wind action. Some of the tombs appear to have been true pyramids, sloping up from the ground, whilst others seem to have initially risen vertically for 1m or more, before sloping in at the top (see comments on type below). The burials seem to have been made in shafts sunk below the pyramids to judge from the activity of tomb robbers, who have tunnelled downwards from one side of the tomb, often leading to the subsequent collapse of the tomb. Several of the pyramids appear to sit on mudbrick platforms, though this picture probably owes something to conservation efforts since the 1960s. A second distinct class of tomb comprises a square or rectangular enclosure with a circular shaft below (ELH 002.64, 2.80). These may have been flat topped originally and though the possibility that the platforms supported pyramids cannot be excluded, a number of other examples of square mudbrick structures preserved only at ground level (ELH 2.15-19, 2.23, 2.26,

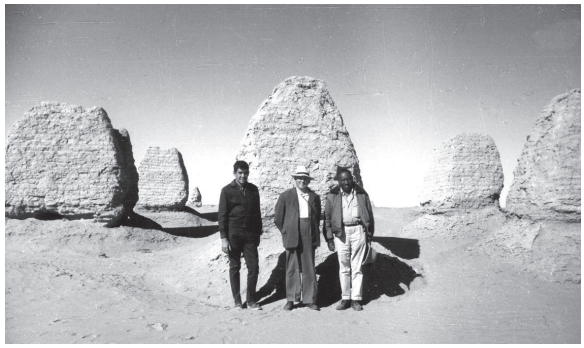


Figure 7.5. ELH 002, pyramid cemetery in the 1960s. The figure in the centre is Sir Ian Richmond, flanked to right by Ayoub and to left by an unidentified man (photo: CMD 1963).

Figure 7.6. ELH 002, preservation of pyramid cemetery in the 1960s (photo: CMD 1963).

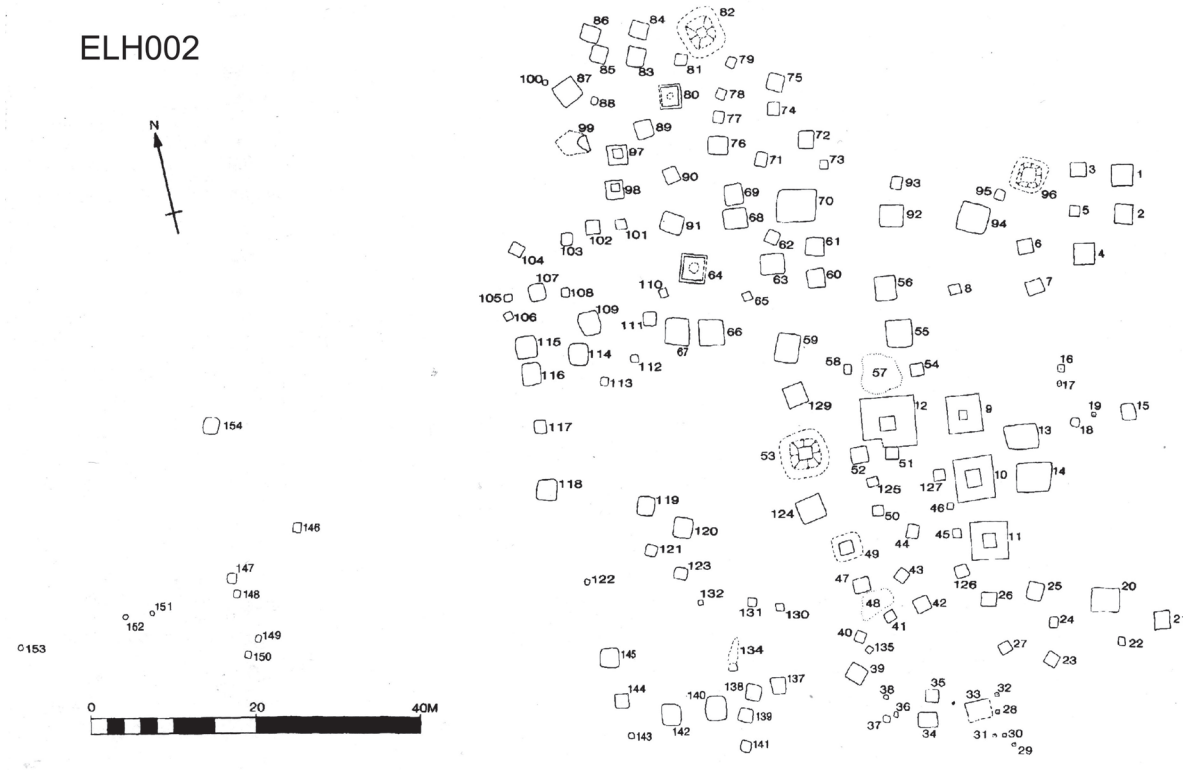


Figure 7.7. ELH 002, plan of pyramid cemetery (FP 1998).

2.67-69, 2.71, 2.73, 2.85-87, 2.101-05, 2.113-16, 2.118-21, 2.123, 2.132, 2.137-43), with no sign of collapsed mudbrick superstructure, supports the identification of a distinct form of burial (type 4b/5b). Square or rectangular mudbrick tombs over circular shafts are well-paralleled at Sāniat bin Huwaydī. A number of other mudbrick features visible as moist patches at the surface were either very small pyramid stubs, or some other form of small tomb marker (ELH 2.28-32, 2.36-38, 2.151-53). A few fragments of sandstone stele (probably of type 4 or type 5) were recovered from the cemetery surface, but no offering tables have been noted. Imported pottery suggests a date range of 1st-4th century AD, and included Italian sigillata and Tripolitanian amphorae. There is evidence for some subsequent industrial activity at the site, with two substantial deposits of ash and vitrified fuel noted within the cemetery (ELH 002.48, 2.57; see further, Section 43, below).

Ancient ground level lay below modern ground level, probably not more than 30-40 cm down. Many tombs appeared as faint surface traces (some showing as damp marks in early morning light) and it is likely that many of these that lacked either vertical height or substantial mound of tumbled mudbricks around may have been simple rectangular tomb markers rather than pyramids. Certainty is impossible without further excavation at the site. In the following list measurements are given in the following order: length (SE-NW) x breadth (NE-SW) x maximum surviving height, with all measurements being rounded to nearest 5cm. Type P1 is a pyramid that

Figure 7.8. ELH 002.1, elevation of pyramid (photo: FP 1998).

Figure 7.9. ELH 002.2, elevation of pyramid (photo: FP 1998).

Figure 7.10. ELH 002.3, elevation of pyramid, showing detail of mudbrick coursing (photo: FP 1998).

originally sloped in from ground upwards, Type P2a is a pyramid on top of a vertical mudbrick shaft (figure in brackets indicates height at which inward slope begins), Type P2b is a near vertical shaft which may have had a small pyramid structure at the top; Type P2c has a sloping base section with a straight shaft above and presumably a pyramidical top (*AF 1*, 192-95). In many cases the remains were too eroded to determine the original type.

2.1: pyramid 2.6 x 2.3 x 3.3m, type P1?; **2.2:** pyramid 2 x 2 x 2.7m, type P2a (1.10m); **2.3:** pyramid 1.75 x 1.9 x 2.8m, type P2a (1.2m); **2.4:** pyramid 2.45 x 2.55 x 3m, type P2a (1.67m), rough stone slab by tomb; **2.5**: pyramid 1.4 x 1.55 x 2.5m, type 1, mudbrick base 2 x 2.2m; **2.6**: pyramid 1.9 x 1.7 x 2.75m, type P2a (1.6m), possible small niche (or damage) 1.7m up NE face, fragment of horned stele between 2.6 and 2.7; **2.7**: pyramid 1.5 x 1.5 x 2.2m, type P2a (1m), large 'skirt' of eroded mudbrick round base; **2.8**: pyramid 0.95m x 1m x 3m, type P2b; **2.9**: pyramid 1.05 x 1.4 x 1.4m (on a restored base of 4 x 4m), type P2a or P2b; **2.10**: pyramid 1.75 x 2.1 x 2.7m (on a restored base 4.5 x 5.1m), type P2a (1.40m); **2.11**: pyramid 1.5 x 1.55 x 2.7m (on base 4.25 x 4.3 x 0.8m), type P2a (1.5m); **2.12**: pyramid 1.65 x 1.7 x 3.2m (on irregular base 7m sq, with SW corner instepped to avoid tomb 2.52), type P2a (2m), fragment of sandstone hand by SE corner, clandestine excavation into base on SW side; **2.13:** collapsed pyramid? 3 x 3m x 50cm mound; **2.14:** collapsed pyramid? 3.5 x 2.5m x 50cm mound, possibly on a base 4 x 4m; **2.15:** rectangular tomb? 1.9 x 3.2m, low mound (<10cm) of mudbrick; **2.16** square tomb? 1.3 x 1.1m x <10cm; **2.17-2.19** tombs? small patches of mudbrick (surface features only); **2.20:** collapsed pyramid? Mudbrick mound 3.5 x 3.5m x 40cm (some coursing visible on N side); **2.21** Pyramid 2 x 2.2m x 80cm, Type P1?; **2.22** stub of pyramid 1.75 x 1.9m x 30cm; **2.23** rectangular tomb? 1.95 x 1.85m x 30cm; **2.24** small pyramid 1 x 1m x 45cm, 3m spread of collapsed material; **2.25** small pyramid? Mudbrick mound 2.5 x 2.3m x 40cm; **2.26** rectangular tomb? 1.95 x 1.6m x <20cm; **2.27** small pyramid 1.15 x 1.37 x 1m, type P2a; **2.28-2.32** tombs? Small patches of mudbrick (surface features only, *c.*50cm diam); **2.33** rectangular tomb? 3.30 x 2.5m x 20cm; **2.34** square tomb 1.9 x 1.9m (surface feature only); **2.35** small pyramid 60 x 70 x 50cm, eroded stub at centre of possible platform 1.7 x 2m; **2.36** tomb? 50cm diam. surface mudbrick feature; **2.37** square tomb? 80cm x 1m (surface feature only); **2.38** tomb? (small surface feature only); **2.39** Collapsed pyramid (reconstructed dimensions) 1.5 x 1.5 x 2m approx., fallen to S as a result of robbing below?; **2.40** small pyramid 1 x 1m x 40cm on possible platform 2.2 x 2; **2.41** small eroded stub of pyramid 1.25 x 1.2m x 60cm; **2.42** collapsed pyramid 2.3 x 2 x 1.40m, Type P1?; **2.43** small eroded pyramid 1.3 x 1.35m x 80cm; **2.44** small eroded

Figure 7.11. ELH 002, state of preservation of the pyramids in 1998 – the low platforms are probably the result of conservation work in the 1960s. Further conservation and consolidation of the monuments has been carried out by the Libyan Department of Antiquities in 2002-03 (photo: FP 1998).

Figure 7.12. ELH 002, kite air-photograph of the NE edge of cemetery (S to top). Note the traces of additional tombs beyond the upstanding monuments (photo: FP 2000).

Figure 7.13. ELH 002, kite air-photograph of the NW area of the cemetery, to W of pyramid 67. revealing traces of additional tombs (photo: FP 2000).

Figure 7.14. ELH 002, surface appearance of the ephemeral traces of mudbrick tombs around the extant pyramids (photo: FP 1998).

pyramid 1.4 x 1.65m x 45cm; **2.45** small eroded pyramid 1.2 x 1.1m x 45cm; **2.46** small eroded pyramid 80 x 90 x 45cm; **2.47** small eroded pyramid 1.25 x 1.1m x 75cm, on platform 1.8 x 1.3m; **2.48** an area of dense burning, ash, 'slag' and charcoal, extending between tombs 2.40, 2.41, 2.47 (*c.*14 x 5m x 10cm thick). The charcoal indicates palm wood/branches. 'The slag' is vitrified material and contains many fragments of the fuel (*cf.* also 2.57); **2.49** Pyramid 2.2 x 2.3 x 1.6m, type P2c?, robbed from NW and partly collapsed; **2.50** small eroded pyramid 1.8 x 1.6m x 70cm; **2.51** small pyramid 1.4 x 1.4m x 80cm, butted up against platform of tomb 2.12; **2.52** small pyramid 1.8 x 1.65m x 70cm, platform of tomb 2.12 appears to step in to avoid this tomb; **2.53** pyramid? Ring of mudbrick 7 x 6m around a robbed shaft, probably for a demolished and robbed pyramid; **2.54** small pyramid 1.6 x 1.55m x 60cm; **2.55** pyramid 2.9 x 2.9 x 1.1m, Type P1; **2.56** pyramid 2.5 x 2.25m x 50cm, Type P1; **2.57** dense spread of ash and charcoal showing through modern sand cover in area at least 5 x 4m between tombs 2.12, 2.54, 2.55, 2.58, similar to the ashy spread 2.48, but no certain slag here; **2.58** rectangular tomb? 1.4 x 1.6m (surface feature only); **2.59** pyramid 3.2 x 3.75 x 1.8m, large area of collapsed mudbrick round and some ashy deposit similar to feature 2.57 overlying the collapse on the S side; **2.60** pyramid? 2.3 x 2.2m x 15cm; **2.61** pyramid? Slight hump of eroded mudbrick on a square platform 2.3 x 2.2m x 15cm; **2.62** square tomb? 1.7 x 1.6m x 10cm; **2.63** pyramid? Platform 2.6 x 1.8m x 25cm, with slight mound of eroded mudbrick on top; **2.64** rectangular tomb 2.87 x 3.22m, outer wall is 35-40cm wide x 40cm high, with a chamfered upper surface. The interior has been dug out to reveal a circular shaft 1.6m diameter and 1.8m deep; **2.65** small pyramid stub 40cm high on a platform 2 x 2.3m; **2.66** pyramid 70+cm x 1.12 x 1.7m on platform 2.7 x 2.5m; **2.67** rectangular tomb? 2.8 x 3.2m (surface feature only); **2.68** rectangular tomb?

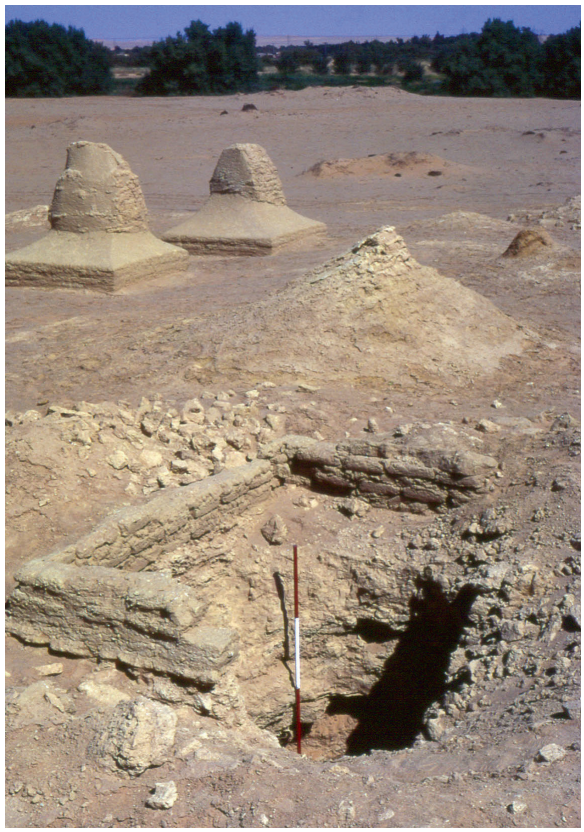


Figure 7.15. ELH 002.64, rectangular tomb, with excavated shaft below (photo: FP 1998).

2.45 x 2.2m, walls 40cm thick (surface feature only); **2.69** rectangular tomb? 1.9 x 2.05m (surface feature only); **2.70** pyramid 3.2 x 3 x 1.5m, Type P1? Large amount of mudbrick collapse around and traces of ashy deposits *cf.* to 2.48, 2.57 by SE corner; **2.71** rectangular tomb? 1.5 x 1.7m (surface feature only); **2.72** pyramid 2.1 x 2.1m x 65cm, type P1?; **2.73** rectangular tomb 1.35 x 1.20m (surface feature only); **2.74** pyramid 2.1 x 1.95m x 50cm (top fallen); **2.75** pyramid 2 x 2m x 45cm; **2.76** pyramid 2.25 x 2.25m x 90cm; **2.77** small pyramid? 1.7 x 1.4m x 15cm; **2.78** small pyramid 1.4 x 1.3m x 30cm; **2.79** small pyramid 0.97m x 1.3m x 15cm; **2.80** rectangular tomb 2.55 x 2.6m, outer wall is 30cm wide x 40-45cm high, with a chamfered upper surface. The interior has been dug out to reveal an oval shaft 80 x 95cm diameter and 1.4m deep; **2.81** small pyramid 1.45 x 1.3m x 40cm; **2.82** collapsed and robbed pyramid? mound of mudbrick 6 x 7m, with excavated 'shaft' 1.4 x 1.9 x 1m to top of infill; **2.83** rectangular tomb? 1.6 x 1.65m (surface feature only); **2.84** rectangular tomb? 1.7 x 2.3m (surface feature only); **2.85** rectangular tomb? 1.2 x 2.25m (surface feature only); **2.86** rectangular tomb? 1.8 x 2.1m (surface feature only); **2.87** rectangular tomb? 2.8 x 2.65m (surface feature only); **2.88** tomb? 1m diameter mudbrick surface feature; **2.89** pyramid 1.30 x 1.30m set off centre at SE side of 2.3 x 1.65m platform; **2.90** pyramid 1.8 x 1.75m x 60cm; **2.91** pyramid 3 x 2.5 x 1.3m, has slumped to NW after robbing; **2.92** pyramid 2.8 x 3 x 1m, type 1; **2.93** tomb? Low mound of eroded mudbrick 1.6m diameter; **2.94** pyramid 3.2 x 3m x 70cm; **2.95** small pyramid 95cm x 1m x 30cm; **2.96** robbed pyramid? Donut-shaped 4m diameter ring of collapsed mudbrick encircling excavated shaft (2m diameter); **2.97** pyramid 1.17 x 1.1 x 1.55m, type P2c, on platform 2.3 x 2.57m x 30cm; **2.98** pyramid 1.24 x 1 x 1.75m, on platform 2.3 x 2.2m x 45cm; **2.99** collapsed pyramid 75+cm x 1.15 x 1.05m on base, collapsed section indicates original height *c.*3m and that robbing from NW side; **2.100** tomb? Mudbrick surface feature 75cm diameter; **2.101** rectangular tomb? 1.8 x 1.25m (surface feature only); **2.102** rectangular tomb? 2.05 x 1.7m (surface feature only); **2.103** rectangular tomb? 1.6 x 1.8m (surface feature only); **2.104** rectangular tomb? 1.7 x 1.4m (surface feature only); **2.105** small pyramid 1.2m x 85 x 15cm; **1.106** small pyramid 90cm x 1.05m x 35cm; **2.107** pyramid? Low mound of mudbrick 2.8 x 2.8m x 30cm high; **2.108** small pyramid 50 x 45 x 10cm (eroded stub); **2.109** pyramid? Low mound of collapsed mudbrick 3m diameter x 40cm high; **2.110** small pyramid 80 x 70 x 35cm; **2.111** tomb? Mudbrick surface feature 1.8m diameter; **2.112** small pyramid stub 85 x 90 x 35cm centre of collapse; **2.113** tomb? 90cm diameter mudbrick surface feature; **2.114** rectangular tomb? 2.5 x 2.7m (surface feature only); **2.115** rectangular tomb? 2.3 x 2.3m (surface feature only); **2.116** rectangular tomb? 2.25 x 2.25m (surface feature only); **2.117** pyramid 1.15+ x 1.6m x 40cm, with extensive tumble to NW; **2.118** tomb? Mudbrick surface feature *c.*3m diameter; **2.119** tomb? Mudbrick surface feature *c.*2.4m diameter; **2.120** rectangular tomb 2.8 x 2.3, mudbrick outer walls, hollow centre; **2.121** tomb? Mudbrick surface feature *c.*1.8m diameter; **2.122** small pyramid stub 70 x 50 x 45cm at centre of area of mudbrick collapse; **2.123** rectangular tomb? 1.9 x 1.7m (surface feature only); **2.124** pyramid 1.8+ x 2.9 x 1.8m, collapsed state shows that solid mudbrick construction throughout; **2.125** small pyramid 1m x 90 x 40cm; **2.126** small pyramid 1.25 x 1.15m x 60cm; **2.127** small pyramid 1.1 x 1.2m x 35cm, type P1; **2.128** tomb? Low mound of mudbrick 1.8 x 1.2m immediately NW of tomb 2.2; **2.129** pyramid 2.1 x 2.2 x 1.4m; **2.130** small pyramid 80 x 95 x 45cm; **2.131** pyramid 1.2m x 90+ x 35cm; **2.132** tomb? Mudbrick surface feature 50cm diameter; **2.133** not used; **2.134** collapsed pyramid 1 x 1 x ?m (collapse extends 3m to NE); **2.135** pyramid 1.5 x 1.5m x 55cm; **2.136** pyramid 50+cm x 1.8m x 50cm (collapse extends 2.9m to N); **2.137** square tomb 2.3 x 2.3m (surface feature only), Italian sigillata found in this area; **2.138** rectangular tomb? 2 x 1.9m (surface feature only); **2.139** tomb? Mudbrick surface feature 1.8m diameter; **2.140** tomb? Mudbrick surface feature 2.9m diameter; **2.141** rectangular tomb? 1.9 x 1.4m (surface feature only); **2.142** rectangular tomb? 2.2 x 2.5m (surface feature only); **2.143** tomb? Mudbrick surface feature 50cm diameter; **2.144** pyramid 90+cm x 1.2 x 1.55m; **2.145** pyramid? low mound of mudbrick 2.3m diameter;

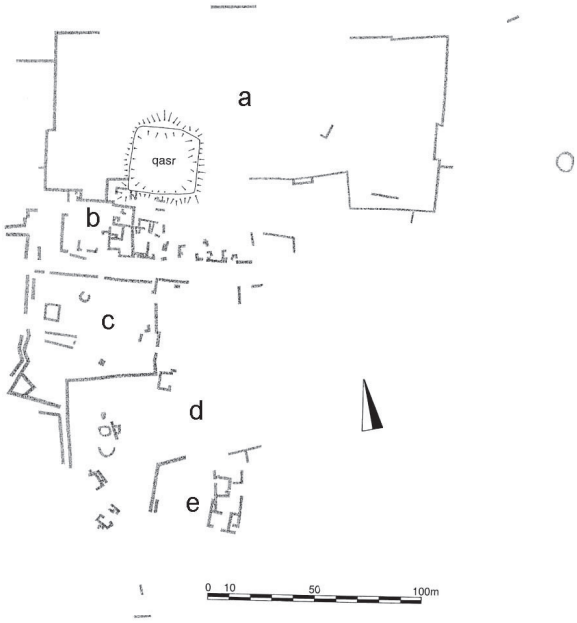


Figure 7.16. ELH 003, plan of qasr *and settlement (FP 1998).*

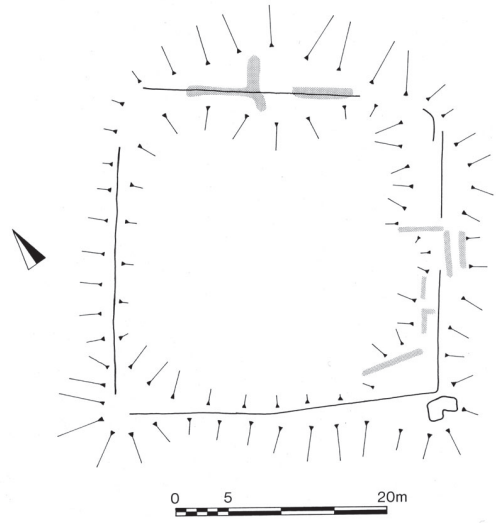


Figure 7.19. ELH 003, detailed plan of visible traces of mubdbrick walling of qasr *(FP 1998).*

Figure 7.17. ELH 003, general view of surface traces of settlement S of qasr *(photo: FP 1998).*

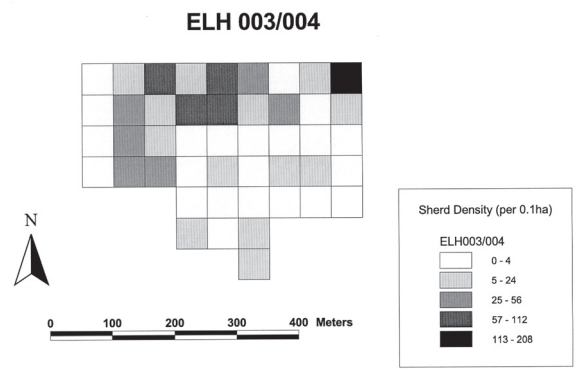


Figure 7.20. ELH 003-004, surface sherding of ELH 003, extending at S extremity to ELH 004 (FP 1998).

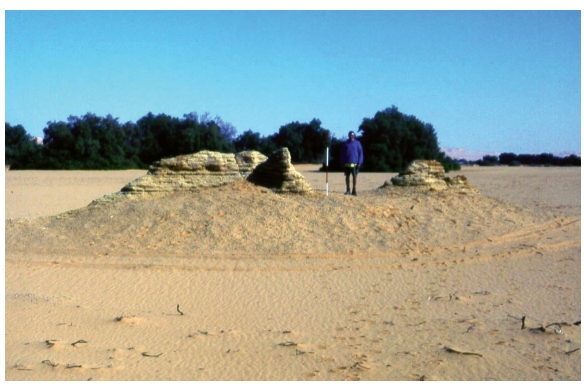


Figure 7.18. ELH 003, qasr *looking NE (photo: FP 1998).*

Figure 7.21. ELH 004, patches of eroded mudbrick interpreted as tombs of possible cemetery (photo: FP 1998).

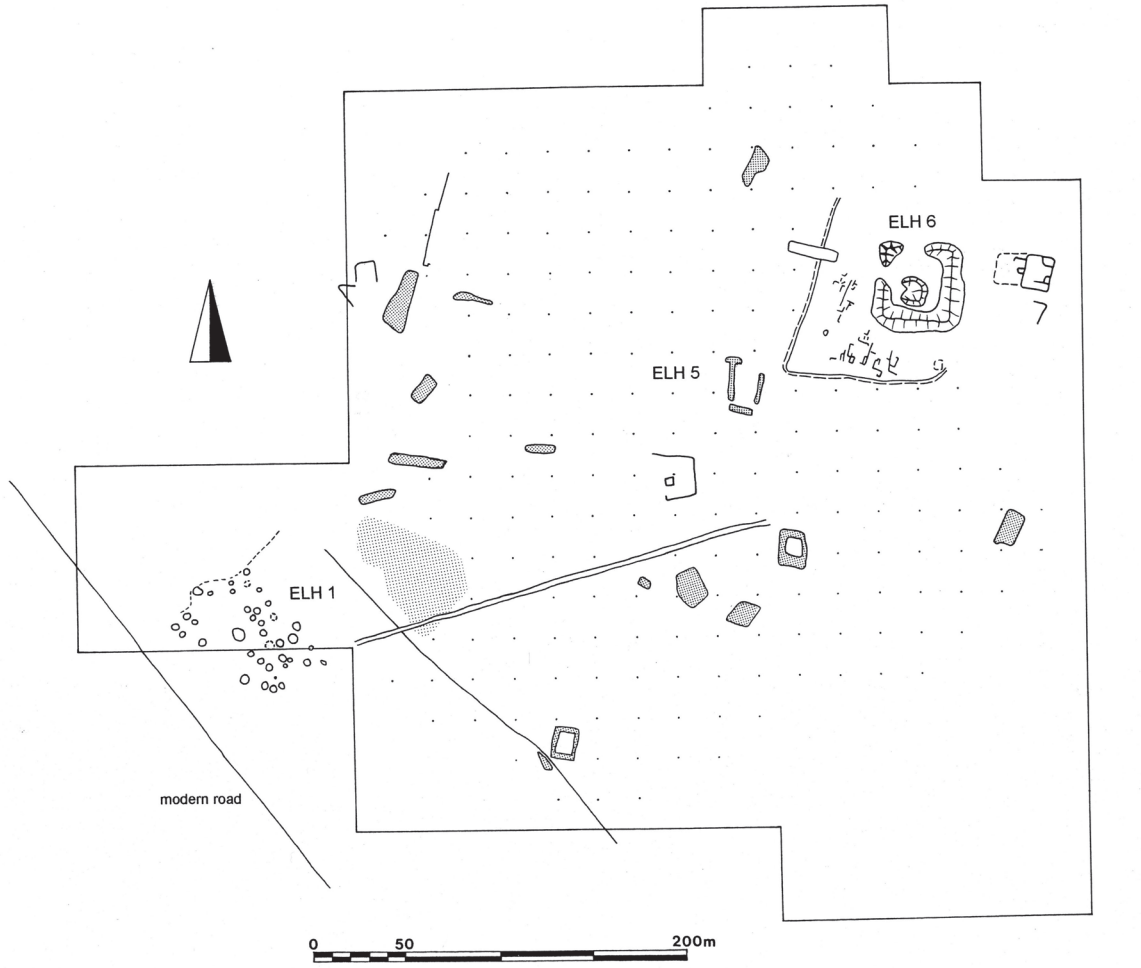


Figure 7.22. ELH 001, 005, 006, general plan of architectural and other surface traces of sites. The outer border shows the location of the 50 x 50 m gridded zone (FP 1998).

2.146 small pyramid 75 x 80cm x 1.15m; **2.147** small pyramid 90 x 90 x 20cm; **2.148** small pyramid 70 x 75 x 15cm; **2.149** small pyramid 70 x 70 x 15cm; **2.150** small pyramid 60 x 50 x 10cm; **2.151** tomb? Mudbrick surface feature 50cm diameter; **2.152** tomb? Mudbrick surface feature 50cm diameter; **2.153** tomb? Mudbrick surface feature 50cm diameter; **2.154** rectangular tomb? 2 x 2.3m x 10cm. (previous reference CMD ELH2) [1959, 1962, 1998]. **CGAR [E-MPAST]**
***Ills: AF 1*, 15, 192-93, 195; *AF 2*, Figs 7.2, 7.5-7.15, 42.4, *front cover*.**

ELH 003 *Qasr*, settlement 26°32.94/12°58.38
An extensive settlement site comprising a substantial mudbrick *qasr* of possibly early type, surrounded by a series of major enclosures and buildings. The site has many similarities with ELH 005/006, which lies only *c.*600m to the W, and with sites such as TAG 011. The *qasr* is defined by a mound formed of the collapse of its mudbrick enclosure walls (*c.*31m NW-SE, 33m NE-SW). There are traces of projecting corner towers at the S and W corners of the structure and in the middle of the SE and NE sides (though the latter could be secondary structures butted against the outside of the *qasr* or traces of the gate which lay most likely to the SE. Exposed elements of the wall top were *c.*1m wide. The internal layout of the building was unclear, though casement rooms around the inside of the outer wall are suggested.

The associated settlement covers an area of at least 230 x 200m (4.6ha) and can be divided into a series of zones: a) a large mudbrick enclosure *c.*175 x 80m on the N and E sides of the *qasr*, largely empty of other features (though this may be a product of sand cover obscuring interior structures; b) a narrow area *c.*105 x 40m on the SW side of the *qasr*, packed with mudbrick buildings; c) a quadrangular enclosure *c.*60 x 50m with traces of further internal buildings; d) a Z-shaped area in part demarcated by enclosure walls, containing traces of some buildings, especially towards the SW; e) a further area of buildings separated from d) by a boundary wall and perhaps a lane. The existence of parallel walls along the SW sides of areas b), c) and d) suggests that the site continued further in

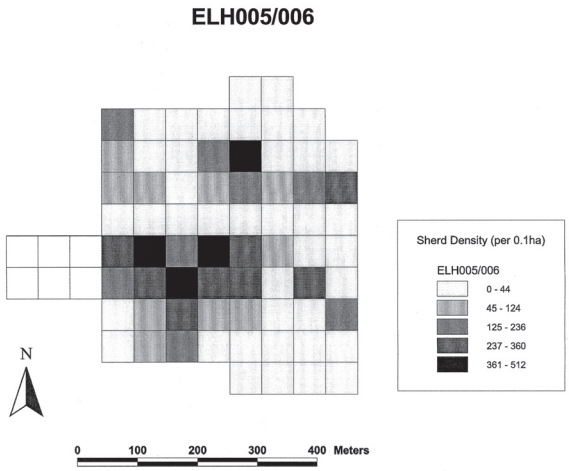


Figure 7.23. ELH 001, 005, 006, distribution of pottery from the area (FP 1998).

that direction beneath an area of drifted sand.

A total of 46 50 x 50m grid squares (11.5ha) was fieldwalked here, covering ELH 003/004. The total sherd count was only 251 potsherds; an average potsherd density of 5.46 per grid square, with 39 grid squares (9.75ha or 85 percent of the total surveyed area) yielding no potsherds, almost certainly the result of drifted sand that covered large areas. The bulk of the sherds came from an area of 1.75ha with visible traces of mudbrick structures. Surface sherds include 1st-4th century AD imported wares. (CMD reference to this site is ELH4/*qasr* B). [1959, 1998]. **PUGAR, CGAR [EMOD]**
***Ills: AF 1*, 111, 126, 148, 158; *AF 2*, Figs 7.2, 7.16-7.20.**

ELH 004 Cemetery 26°32.80/12°58.46
A series of low mudbrick features *c.*200m SE of *qasr* ELH 003 – surveyed and fieldwalked 1998. The visible features comprise a rectangular mudbrick structure 1.6 x 1.5m, surrounded by four low mounds (*c.*3m diameter) of collapsed mudbrick structures, two with circular shafts at the centre – suggestive of robbed graves. The most likely interpretation is that this is a small cemetery of mudbrick tombs, but the evidence does not permit identification of tomb type. There may have been additional features in the vicinity, but none were visible because of the blown sand typical of this area. **PUGAR? CGAR**
***Ills: AF 1*, 111, 126; *AF 2*, Figs 7.2, 7.20-7.21.**

ELH 005 Settlement 26°33.05/12°57.80
Settlement to SW of *qasr* ELH 006, surveyed 1998. Presence of settlement remains here were first noted during CMD's 1959 visit. Although the densest area of the settlement lay close to *qasr* ELH 006, within an L-shaped enclosure, fieldwalking and the topographical survey in 1998 noted traces of numerous other buildings, revealed either as clear lines of mudbrick walling or alternatively as spreads of decayed mudbrick indicating collapsed structures. These structures are dotted across an area

Figure 7.24. Kite air-photograph of part of ELH 005 settlement contained within an enclosure immediately adjacent to qasr *ELH 006, whose outer wall is visible in bottom right corner of image (photo: FP 2000).*

of 400 x 300m between *qasr* ELH 006 and the nearby cemetery ELH 001. To the E and NE of the *qasr* and N of building 1 there are three very large and conspicuous 'spring mounds', and in 1998 traces of additional buildings were found emerging from beneath one of them. Two of the outlying structures were relatively clear in plan (buildings 1 and 2), comprising enclosures of 10-20m x 20-30m, with rooms attached to one or more sides. At least three of the other outlying buildings were of this general type to judge from their appearance as rectangular enclosures with hollow centres. What we appear to have here is an enclosed, dense and well-organised zone of settlement around the *qasr* (100 x 120m, 1.2ha) and a more dispersed and less regular series of structures forming a halo around (*c.*10ha).

Fieldwalking here covered the area of sites ELH 001, 005 and 006. The total potsherd count across 75 50 x 50m grid squares (18.75ha) was 1,830; an average potsherd density of 24.4 per grid square, though 20 grids (5ha or 26.7 percent of the surveyed area) contained no artefacts.

Some artefacts (potsherds and lithic materials) were collected from on top of visible (and conjectural) wall lines, floors and building debris. By far the majority of sherds came from a core centred on 12 contiguous

grid squares, stretching 300-400m east of the pyramid cemetery ELH 001. There is a second higher-density 'cluster' of potsherds around the *qasr* ELH 006. Roman imports (1st-4th century AD) featured among the diagnostic pottery, alongside Garamantian coarsewares. There is a thin scatter of Pleistocene lithics across the area, including Acheulean and Mousterian pieces. **PUGAR, CGAR [PAL]**
***Ills: AF 1*, 111, 123-124; *AF 2*, Figs 7.2, 7.22-7.24, 43.7.**

ELH 006 *Qasr* 26°33.11/12°57.90
Qasr site within the larger settlement complex ELH 005 and NE of pyramid cemetery ELH 001. The *qasr* measures *c.*36 EW x 40m NS, with its outer wall preserved to a maximum height of *c.*4m above modern ground surface, and where best preserved the outer wall was *c.*1m thick. There are traces of internal rooms built against the inside face of the S wall and another structure in the S part of the central court. The entrance to the *qasr* is not clear, but it may have been in one of the existing breaks in the mound of collapsed walling on the W or N sides. (originally CMD *Qasr* A/ELH2) [1959, 1998]. **PUGAR, CGAR**
***Ills: AF 1*, 111, 123-5; *AF 2*, Figs 7.2, 7.22-7.24.**

ELH 007 Cemetery (pyramid)? 26°33.80/12°57.08
A fragment of a probable pyramid tomb was located *c.*500m N of ELH 002, in an area that had been recently bulldozed. The eroded mudbrick structure was squarish *c.*1.5m x 1.5m and 1m high. It is possible that this is part of a further small cemetery in the Wādī centre, adjacent to settlement ELH 008. [1998]. ***CGAR***

ELH 008 Settlement, lithics scatter 26°33.79/12°57.10
Settlement to NE of ELH 002 and running E from tomb ELH 007 in an area of occasionally dense blown sand and prominent spring mounds. Sporadic building traces and concentrations of ceramics were recorded during fieldwalking in 1998, though the N end of the site has been affected by the bulldozing noted above (ELH 007). The plan of one of the buildings was fairly clear at the surface, comprising a squarish enclosure of *c.*20 x 20m, with rooms along at least one side. Close by were two ash-filled pits, visible in a bulldozer cut. This dispersed site, similar to the outer halo of structures around ELH 005, may have been associated with traces visible on APs of a square enclosure (now destroyed), with possible towers at corners and at the centre of the walls. That looks like another *qasr* site, similar to ELH 003 and 006.

The total potsherd count across 30 50 x 50m grid squares (7.5ha) at ELH 008 was 512 potsherds, an average potsherd density of 17.07 per grid square, with eight squares (2ha or 26 percent of the total surveyed area) containing no potsherds. Finds clustered in the NW portion of the surveyed area, where there were also

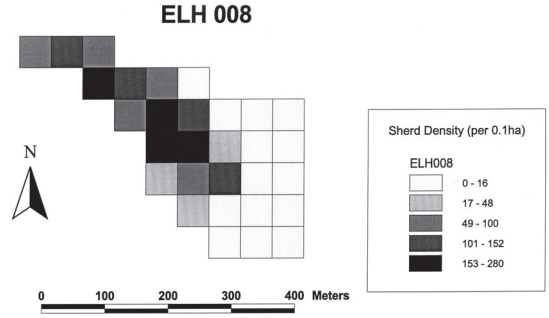


Figure 7.25. ELH 008, distribution of pottery from the area (FP 1998).

traces of mudbrick structures. There was also a notable concentration of Pleistocene lithics at ELH 008 (117 worked pieces compared with 26 from ELH 005 and two from ELH 003).

There was no correlation between grid squares that contained lithics and grid squares with higher potsherd densities, with a significant cluster of lithic finds to the SE of the main pottery concentration (including two bifaces). This appears to represent a Palaeolithic activity site. [1998]. [**PAL], CGAR**
***Ills: AF 2*, Figs 7.2, 7.25.**

ELH 009 *Qasr*, enclosed settlement 26°34.20/12°58.80
Settlement mound identified from APs. Indications of square core structure and enclosure wall, similar in form to other *qsur*. No ground survey. ***CGAR*?**

ELH 010-011 Foggara groups 26°32.40/12°54.60
Two adjacent groups of foggaras to E of the Tāqallit headland. Both comprise three main long foggara channels with a complex dendritic system of feeder tributaries, running up the E side of Tāqallit headland. A shorter group of three parallel channels, heading NE, lies to the W of the long channels. Plotted from APs and observed from Tāqallit headland. [2000]. ***GAR***
Ills: AF 1, **243, 257.**

ELH 012 Foggara group 26°32.40/12°55.20
Group of *c.*14-15 foggara channels, originating to the E of Tāqallit promontory and running N, or NNE and then NNW, towards the area of ELH 014-015. The foggaras are not fully traceable in the upstream parts of their courses, and in the middle of their courses modern irrigated agriculture has obscured them. Nevertheless it is clear that they were bunched very close together; several have tributary branches near their origins, and some foggaras cross the line of others, indicating at least two main phases of construction. Most seem to have been between 3.75 and 4.5km long. Plotted from APs. ***GAR***
***Ills: AF 1*, 243.**

ELH 013 Foggara group 26°32.00/12°56.40

Figure 7.26. ELH 013, channel of foggara F22, revealed in side of modern well (photo: FP 1998).

Figure 7.27. ELH 018, engravings of elephants (photo: FP 2000).

Figure 7.28. ELH 018, engravings of elephants (photo: FP 2000).

Group of *c.*11 clustered foggaras, with two further outliers towards the SE, running NE into the area of settlements and cemeteries ELH 001-002, 005-006, 008. These are visible as spoil banks approaching the track from al-Ghrayf to Ubārī; in many cases they have been destroyed for some distance to the north of the track by modern irrigated agriculture and bulldozing to heap up field boundaries, before reappearing in uncultivated land nearer the pyramid cemeteries ELH 001-002. Remains of a mudbrick lining to one of the access shafts was visible on one of the most easterly of the main group (26º32.01/12º56.96).

Some foggaras were examined on the ground to the S of the cemeteries: **F21**: Visible S of the road between pyramid cemeteries ELH 001 and 002. Traceable S from the modern road as a faint line of small mounds composed partly of calcareous subsoil and looking like decayed mudbrick. Near a line of telegraph poles a relatively modern well surrounded by a low mudbrick wall cuts through the foggara channel (W: *c.*80cm; channel H to fill *c.*1.10m). At this point the top of the channel roof is 2.20m below the present ground surface.

F22: Possible foggara channel exposed in the S side of a modern well, to the N of the road by ELH 008**.** Blocked after *c.*30 cm. Top of the feature is *c.*2.5m below modern ground level.

F23: Foggara visible as low bank or line of spoil rings in sandy/gravelly terrain. **F24**: Visible as low spoil rings of light clay near modern cultivation. Starts by modern irrigated field; crossed by the later tributary to F26. **F26**: Large foggara, visible as a wide spoil bank 1m or so high and up to 15m wide. A diagonal cross-tributary joins it from beyond F24, suggesting that F24 may have fallen out of use or have been captured for use by F26, whose surface traces might be larger either because it continued in use for longer, or it runs at a deeper level. Some Pleistocene lithics recovered close to foggara lines. ***GAR*** **[PAL]** ***Ills: AF 1*****, 243, 252;** ***AF 2*****, Fig. 7.26.**

ELH 014 ***Qasr*****?** **26°34.50/12°54.30**
Small structure *c.*20m square in Wādī centre, in area served by foggara group ELH 012. Identified on APs only. ***GAR?***

ELH 015 ***Qasr*****?** **26°34.80/12°54.60**
Small structure in Wādī centre, in area served by foggara group ELH 012. Identified on APs only. ***GAR?***

ELH 016 Cemetery **26°30.70/12°57.76**
Small Type 2 dispersed cairnfield on N side of hill along foot and lower slopes. Estimated 50-100 graves. Dispersed

type 1 mound and type 3a drum cairns, some standing to 1m high x 2-3m across. A few proto-stele were noted on E or W sides. There are a few elongated oval tombs and some examples of 2-3 cairn tombs butted against each other in a line. No finds. Identified on APs and visited 2001. [2001]. ***PUGAR***

ELH 017 Cemetery 26°30.30/12°57.00
Small dispersed cairnfield on NW side of hill. Estimated 50-80 graves. Identified on APs only. ***LPAST? GAR?***

ELH 018 Rock art 26°30.70/12°57.74
This is the Wādī Būznā rock art site, previously recorded (see Pesce 1968; Jelínek 1994). The engravings are located primarily on the N side of the W summit of an outlier of the escarpment, with magnificent views of the Wādī al-Ajāl and the entrance to the Wādī Būznā, which gives access up to the Massāk Ṣaṭṭafat. The scenes include some large-scale elephants (*c.*1.5m high) and giraffes, as well as bovines, ovicaprines, mouflon, other quadrupeds and humans (armed with bow and arrow and evidently hunting elephant). There are also some enigmatic heart-shaped symbols.[2001]. ***PAST***
***Ills: AF 2*, Figs 7.27-7.28.**

ELH 019 Antenna tomb 26°30.76/12°57.74
Antenna tomb (central cairn is *c.*3m diam, with arms of 12-13m aligned NE and SE, and the tomb facing almost due E. The tomb lies on the flattish pediment a short distance to the N of cemetery ELH 016, from which it is clearly distinct. [2001]. **LPAST**

ELH 020 Lithics scatter 26°31.02/12°54.26
Amorphous Pleistocene lithics scatter (600m extent) with cores, on gravels. (FP2000-02.17). **PAL**

ELH 021 Lithics scatter 26°29.11/12°54.86
Large Pleistocene flakes and a single coarse potsherd, on gravels. (FP2000-02.18). **PAL**

ELH 022 Lithics scatter 26°29.06/12°54.89
Pleistocene lithics scatter with biface, on gravels. (FP2000-02.19). **PAL**

ELH 023 Lithics scatter 26°28.72/12°55.65
Pleistocene bifaces, cores and flakes at escarpment base. (FP2000-02.20). **PAL**

ELH 024 Cave 26°28.55/12°55.63
Shallow rock shelter/overhang. (FP2000-02.21).

ELH 025 Cairns, lithics scatter 26°29.33/12°56.23
Two denuded cairns amid dense scatters of Pleistocene lithics on gravels at end of escarpment embayment. (FP2000-02.22). **PAL, *LPAST?***

ELH 026 Lithics scatter 26°31.18/12°54.21
Palaeolithic scatter (*c.*20 x 20m) with large biface, on gravels. (FP2000-02.16) [2000]. **PAL**

ELH 030 Lithics scatter 26°35.97/12°57.16
Sparse scatter of Holocene flakes on deflated gravels on margins of palaeolake. (FP2000-04.1) [2000]. **PAST**

ELH 031 Lithics scatter 26°36.46/12°57.16
Cluster of Holocene flakes, débitage and shattered fragments on deflated interdune sand. (FP2000-04.2) [2000]. **PAST**

ELH 032 Lithics scatter 26°36.69/12°57.03
Mid-Holocene lithics scatter including a polished stone axe on deflated sands at margins of palaeolake. (FP2000-04.3) [2000]. **LPAST, PAST**
***Ills: AF 2*, Fig. 42.6.**

ELH 033 Lithics scatter 26°36.93/12°57.32
Aterian point, bifacial foliate and sidescraper; cluster of Holocene lithics on deflated sand at convergence of palaeolake and sand deposition. (FP2000-04.4) [2000]. **PAL, PAST**
***Ills: AF 2*, Fig. 42.2.**

ELH 034 Lithic scatter, occupation? 26°36.23/12°57.75
Holocene lithics scatter and coarse fabric sherd on deflated sand at margins of palaeolake depression. (FP2000-04.5) [2000]. **PAST**

ELH 035 Lithics scatter 26°36.14/12°57.77
Sparse Holocene lithics scatter with scraper on sand E of ELH 034. (FP2000-04.6) [2000]. **PAST**

ELH 036 Lithics scatter, occupation? 26°36.03/12°57.84
Acheulean biface, side-scraper and flakes, also Holocene lithics; two coarse fabric friable, impressed potsherds (fawn-coloured on outside); ostrich eggshell fragments, organic residues and freshwater molluscs on indurated and rippled sand surface, encrusted with gravels and salt efflorescence between dunes. (FP2000-04.7) [2000]. **PAL, PAST**

ELH 037 Lithic artefact 26°35.14/12°58.19
Pleistocene biface. (FP2000-04.8) [2000]. **PAL**

SECTION 8. AL-GHRAYF [EL-GREIFA] (LGR)

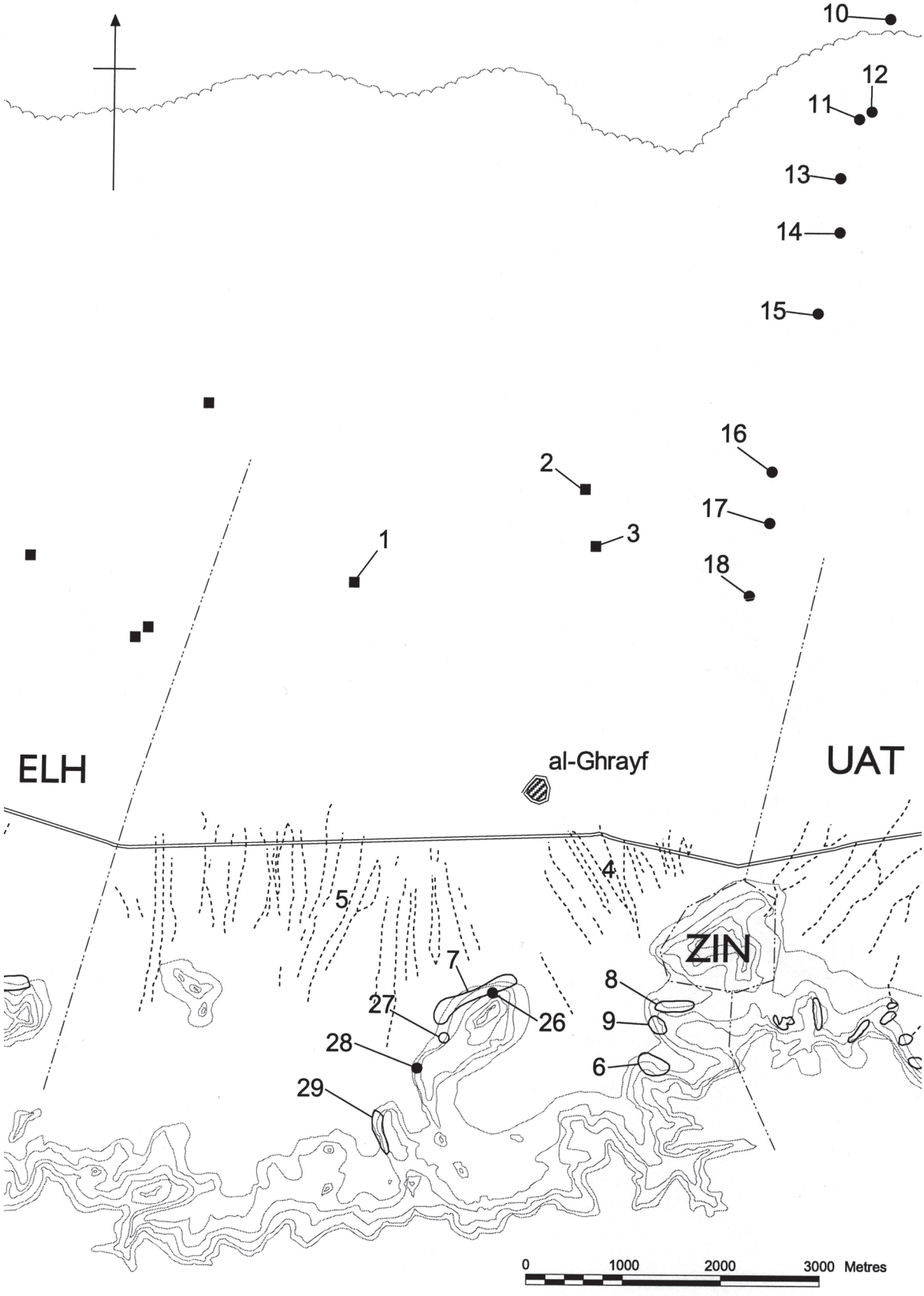


Figure 8.1. Map of sites in al-Ghrayf sector (CMD/FP).

The area of al-Ghrayf ('El Greifa') in the Wādī centre was first visited by CMD in 1959 (Figs 8.2-8.3) during the initial reconnaissance, and again in 1963 when further work was carried out at al-Ḥaṭīya just to the W. A brief study was also made of the early modern village by Howells in 1959-60, following up earlier architectural and ethnographic study (Despois 1946, 114; Howells 1960; Scarin 1934, 90-91). Al-Ghrayf (Scarin 1937b – 702 inhabitants, 6,000 date palms) was an unusual village with a mixed Tuareg and Fazzānese population, split between three nuclei. Some of the early European travellers were uncomplimentary about the morals of its occupants (Barth 1857, 143).

No ground survey was carried out by CMD along the escarpment edge here. AP coverage from the 1950s shows that there were numerous *sāniat* farmsteads in this part of the Wādī, around the small nucleated village. By comparison, the areas to both W and E were much more sparsely inhabited. Some systematic survey of parts of the Wādī centre were carried out in 1998-1999, by which time this area had been transformed following the construction of a new town along the modern tarmac road and the expansion of agriculture in the Wādī centre. Sites with FP2000-01 identifiers (LGR 10-18) were recorded by line-walking in the 2000 season
***Ills: AF 1*, 243; *AF 2*, Figs 8.1-8.3.**

LGR 001 *Qasr*? 26°33.30/12°59.10
Located NW of al-Ghrayf on the NE side of the old road to al-Ḥaṭīya. The site consisted of a large solid mound some 30-40m square, and at least 5m high. No trace was visible at surface of walls, towers or internal constructions, although a ditch was noticeable, especially at the SW angle. This mound differed from most other *qsur* in that it survives as a solid mound while others have generally collapsed into hollow squares. Sherds of red pottery – with Roman forms, but not burnished, were noted as well as 'Berber' types.

Subsequent to CMD's 1959 visit, the site was investigated by Ayoub. He describes a large central mound *c.*3m high and *c.*1,600m^2 with a courtyard area inside an outer enclosure wall, only preserved along the S side. Small-scale excavations within the mound revealed corridors and rooms, but were not completed. Reported finds included 'Berber'-type pottery, grindstones, beads and domestic debris. The date of the site remained uncertain, but seems likely to be Garamantian (Ayoub 1962, 12). Site also identified as 'Teghremt' or 'Temhement' and '*Qasr* C' by CMD. ***CGAR?***
***Ills: AF 2*, Figs 8.4-8.5.**

Figure 8.2. al-Ghrayf mosque (photo: CMD 1965).

Figure 8.3. al-Ghrayf village (photo: CMD 1959).

Figure 8.4. LGR 001, mound over qasr*, before excavation by Ayoub (photo: CMD 1959).*

Figure 8.5. LGR 001, area of qasr *excavated by Ayoub (photo: CMD 1963).*

LGR 002 *Qasr*? 26°33.60/13°00.60
Large square enclosure with central structure and possible eastern annexe or gate, recorded from APs. Enclosure wall *c.*80m square, with indications of corner towers, additional two towers on S wall and gate in centre of north wall. No ground survey. ***GAR-ISLAM?***

LGR 003 *Qasr*, enclosure 26°33.00/13°00.60
Square structure within large mound with possible enclosure wall, *c.*300m S of LGR 002. Recorded from APs only. ***GAR-ISLAM?***

Figure 8.6. LGR 004, partially preserved foggaras amid modern cultivation, looking NW from Zinkekrā (photo: FP 1997).

Figure 8.7. LGR 004, detail of foggaras, looking NW from Zinkekrā (photo: FP 1997).

LGR 004 Foggara group 26°31.20/13°01.20
Cluster of *c.*16-18 foggara channels spread over *c.*1.5 km, running NW from the W slopes of Zinkekrā towards the area of modern al-Ghrayf. Longest examples *c.*1.5km long. Plotted from APs; F1-F8 were investigated in 1997, when they were traceable to within 100m of the escarpment base. F1 and F2 are described here for illustration; for F3-F8 see sketch (Mattingly *et al.* 1998a, fig. 9): **F1** first becomes traceable in gravely terrain a little to the north of cultivated fields by the NW spur of Zinkekrā, initially as a line of almost contiguous gravel rings about 9-10m in diameter, and then as a pair of parallel gravel banks with a depression between. This runs N for some 350m before being interrupted by a modern track. North of the track it continued for some 525m, the first 165m as a more or less continuous gravel bank, and for the next 360m as a bank of reddish-brown earth with frequent clear traces of partial collapse into shafts at approximately 9-12m distance centre to centre. It met the Jarma to al-Ghrayf road at a modern hut, in one of whose rooms a depression representing collapse into the top of a shaft was still visible. North of the road dense cultivation rendered it untraceable. **F2** appears to originate in a large well (F2.1) by the NW spur of Zinkekrā. The well is 26.7m deep, and local informants say that a foggara channel about a metre high is visible at the bottom of this well. Given the well's position on the projected course of a line of visible shafts shortly to the north, it is very possible that this was the 'mother well' or initial shaft along the foggara's course. A narrow modern rock-cut linear staircase descends part of the way, below which the well has recently been deepened, probably in pursuit of a water table whose level is dropping because of increased modern abstraction. A motorised irrigation pump is now installed in the bottom. North of the presumed mother well a line of shafts is clearly visible amid modern cultivation, of which two shafts (F2.2 and F2.3) are not entirely filled in. Both are *c.*60cm square in plan, somewhat collapsed in their upper parts, and partially filled in. Depths to fill were measured as 7.5m for shaft F2.2 and 6m for F2.3. Further N beyond the cultivated fields, the foggara was clearly visible as a line of gravel rings of spoil, similar to the initial part of F1. It ran parallel to F1, 38m to the W, for *c.*350m before being interrupted by the modern track, beyond which it cannot be traced owing to modern cultivation. Some Pleistocene lithics noted in spoil heaps. ***GAR* [PAL]**
***Ills: AF 1*, 243, 250; *AF 2*, Figs 8.6-8.10**.

LGR 005 Foggara group 26°30.60/12°59.40
Cluster of *c.*26 foggara channels spread over *c.*2.5 km, originating N of the escarpment and oriented near N-S. Longest examples traceable for *c.*1.5 km, but their ends are probably obscured by oasis cultivation. Plotted from APs. **F20**. Foggara channel exposed in modern well to W of al-Ghrayf and investigated in 1997. The top of the channel lies 5.75m below present ground surface. The channel has an arched cross-section, but is partly collapsed and slumped, H:1.60m+, W: 92cm near top, 1.30m two-thirds of the way down; the remainder of the cross-section is obscured by slumping. The channel emerges on the S side of a well originally 3m in diameter, subsequently enlarged for the installation of a pump. The floor of the enlarged well is *c.*2-3m below the floor of the foggara channel, and is covered in rubbish. There is no certain sign of the foggara channel in the N side of the well, where it has probably been concealed by mud wash down the side of the shaft.

Where the foggaras in this group approach the escarpment, several run through a dispersed cairn cemetery (LGR 007 and LGR 027). At several places, cairns appear to overlie (and thus post-date) the spoil banks of the foggaras (as at 26°30.681/13°00.457 and 26°30.477/13°00.302). In another case a small setting of upright stones has been created on top of the sandy infill of a foggara shaft (26°30.477/13°00.302). The mother well of one foggara was open and appears to have been at least 20-30m deep (26°30.615/13°00.400). A few 100m S of the main road to W of the village a modern well has been cut down through a foggara shaft exposing the channel (base at a depth of *c.*10m below modern ground level, with a very wide arched shape (*c.*2m high x 4m wide), probably the result of successive phases of collapse and maintenance. ***GAR***
***Ills: AF 1*, 243.**

Figure 8.8. LGR 004, spoil mound of foggara F1 (photo: FP 1997).

Figure 8.9. LGR 004, spoil mound and shafts of foggara F6 (photo: FP 1997).

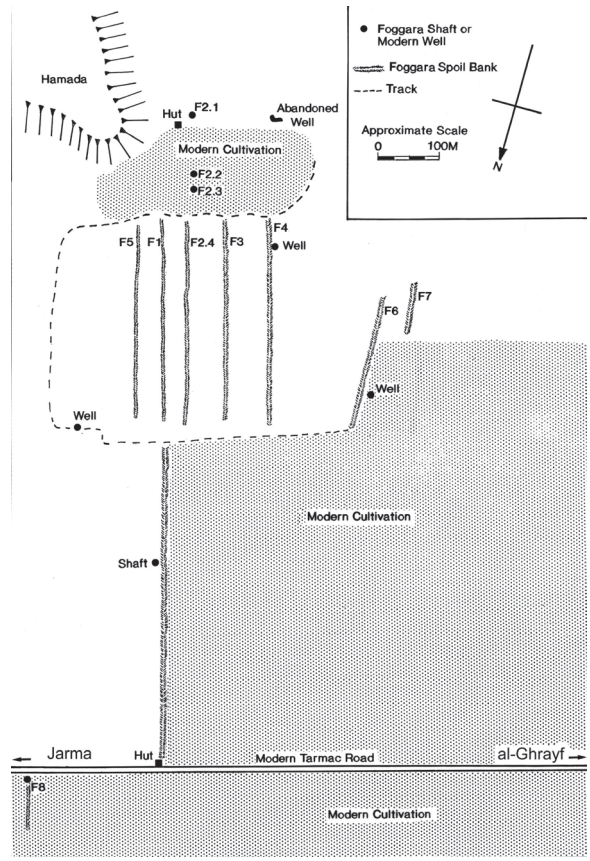


Figure 8.10. LGR 004, sketch plan of foggaras (FP 1997).

LGR 006 Cemetery 26°30.20/13°01.32
Dispersed cairnfield on N-facing slopes of isolated hill. Identified on APs only. ***LPAST? GAR?***

LGR 007 Cemetery 26°30.40/13°00.00
Dispersed cairnfield on NW-facing slopes of escarpment. Estimated 150-200 tombs. Identified on APs only. ***LPAST? GAR?***

LGR 008 Cemetery 26°30.7/13°01.38
Dispersed cairnfield on NW-facing slopes of escarpment. Estimated 50-70 tombs. Identified on APs only. ***LPAST? GAR?***

LGR 009 Cemetery 26°30.4/13°01.32
Small cairnfield on W-facing slopes of escarpment. Estimated 20-40 tombs. Identified on APs only. ***LPAST? GAR?***

LGR 010 Lithics scatter 26°36.10/13°02.51
Pleistocene quartzite flakes and petrified wood fragments on sand promontory overlain with gypsum deposits at margins of small palaeolake. (FP2000-02.1). **PAL**

LGR 011 Lithics scatter 26°35.54/13°02.35
Pleistocene lithics scatter, Acheulean/Mousterian biface, tanged Aterian limace and possible early Holocene flake, on sand. (FP2000-02.2). **PAL, PREPAST?**

LGR 012 Lithics scatter 26°35.59/13°02.42
Lithics scatter with Acheulean/Mousterian biface, large blades and flakes, and two wind-abraded cores on sand at margins of palaeolake. (FP2000-02.3). **PAL**

LGR 013 Lithics scatter 26°35.20/13°02.25
Sparse scatter of lithics flakes on sand. (FP2000-02.4). **PAL?**

LGR 014 Lithics scatter 26°34.90/13°02.26
Lithics scatter of abraded (Holocene?) materials by electricity pylon in association with spoil heap from digging pit for pylon, on gravels. (FP2000-02.5). **PAST?**

LGR 015 Lithics scatter 26°34.45/13°02.14
Lithics scatter on raised sand bed in mudflats. Mudflats around devoid of finds (FP2000-02.6). **PAL?**

LGR 016 Lithics scatter 26°33.57/13°01.90
A few large Pleistocene orange quartzite flakes, on mudflats (FP2000-02.8). **PAL**

LGR 017 Lithics scatter 26°33.29/13°01.89
Lithics scatter, on mudflats (FP2000-02.9). **PAL?**

LGR 018 Lithics scatter 26°32.88/13°01.79
Lithics scatter with lower density coincident with perimeter of palm trees on S edge of mudflats. (FP2000-02.10). **PAL?**

LGR 026 Rock art, inscriptions 26°30.70/13°00.53
A series of Libyan inscriptions (some pecked and weathered, others scratched and fresher looking) on a group of isolated boulders at the foot of the N end of a projecting outlier of the escarpment. There is a crude pecked image of a bovine on one block. ***PAST, GAR-EMOD***

LGR 027 Cemetery 26°30.49/13°00.36
A fairly dense cluster of type 1 cairns and large oval stone rings on a narrow ridge down the escarpment face. The association of human bone suggests that these are all burials of a Type 2 cemetery. Some cairns overlie foggara LGR 005 spoil mounds. ***GAR?***

LGR 028 Rock art 26°30.24/13°00.10
Small pecked engraving of a group of bovines on an isolated boulder at the foot of the escarpment. **PAST**

LGR 029 Cemetery 26°30.00/12°25.89
A dispersed Type 2 cemetery of *c.*100 type 1 mound cairns, type 3a drum cairns and flat-topped cairns, spread along the foot of the escarpment in a N-S alignment. Some of the drum cairns stand up to 1m high and have type 1 stele (generally two) on the E side. Several tombs have traces of mud and stone construction in their upper portions, suggesting that they were perhaps originally stepped (type 5a). In general the tombs are well preserved and a number appear unrobbed. In a number of cases small groups of 2-3 cairns abutted each other. The complete absence of pottery, the early signs of clustering and the proto-stele suggest a date in the later 1st millennium BC. ***PUGAR***

SECTION 9. ZINKEKRĀ [ZINCHECRA] (ZIN)

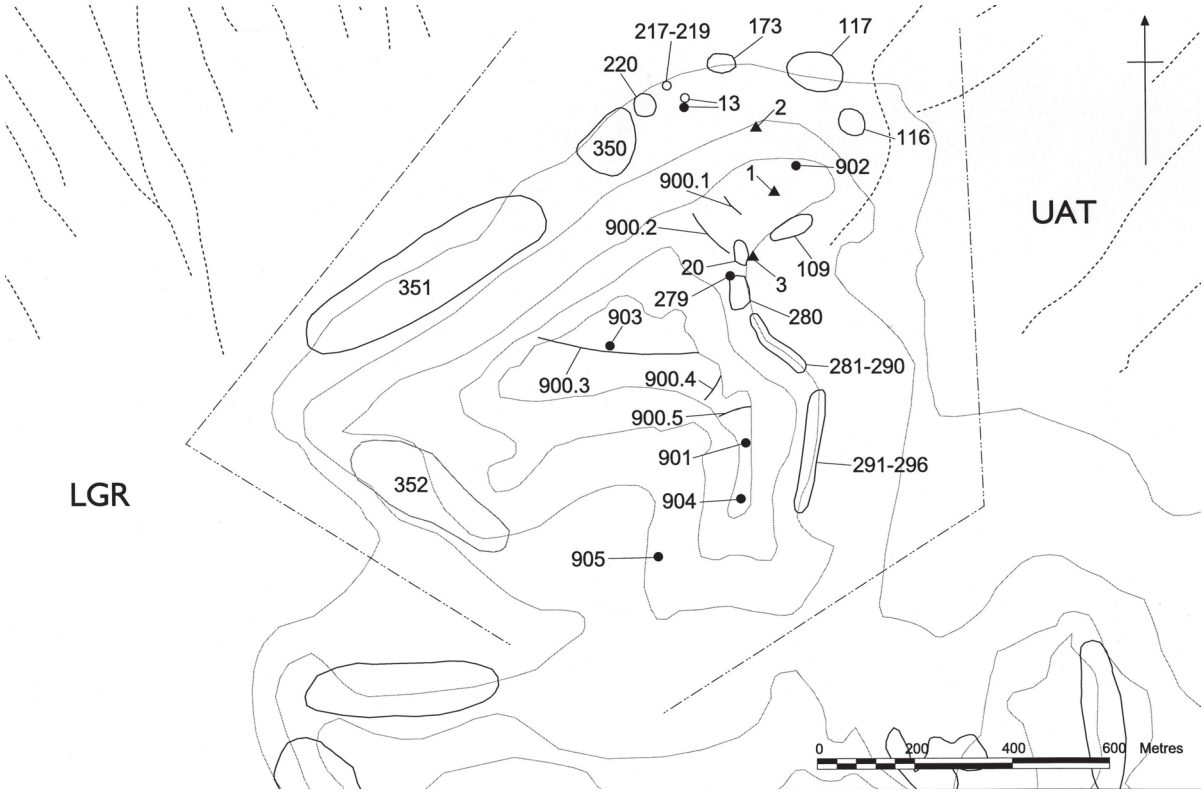


Figure 9.1. Map of principal sites in Zinkekrā sector (CMD/FP).

The promontory known as Zinkekrā is an isolated outlier of the Massāk Ṣaṭṭafat. Its steep scarps make it a natural fortress, though life would have been difficult here without locally accessible water sources. There may thus have been a still functioning springline here in the 1st millennium BC (Drake *et al.* 2004). Zinkekrā has been the subject of intensive survey and test excavations by CMD (Daniels 1968; 1970b; 1989), as well as earlier excavations by Caputo, mainly on the S side of the hill (Pace *et al.* 1951, 220-24, 229-33; *cf.* also Ayoub 1962, 13-14). It is the type site for early Garamantian settlements and also has an unusual set of later Garamantian monuments (including some impressive structures and rock engravings as well as the ubiquitous cemeteries). Most attention has focused on the N tip of the promontory, where Garamantian settlement activity concentrated (ZIN 001-003) and around the foot of which were located some of the major cemeteries (see Daniels 1968, for preliminary listing of sites and finds). But it is apparent that the entire promontory has been utilised for a range of activities. In particular there is a sequence of major walls (ZIN 900) that indicate that the defensible area extended well beyond the small *éperon barré* of ZIN 001. There are some major cemeteries of varying date around the foot of the hill (Fig. 9.1).

Additional survey work was carried out by CMD on the escarpment edge around the promontory, mainly in 1965, covering the area SE as far as the UAT sector. In addition to his earlier publications, further detail of CMD's work at Zinkekrā will be published in *AF 3*, and the listing here is thus by no means comprehensive. Some additional work has also been carried out by FP on the promontory and the upper escarpment plateau between 1997-1999.

The Zinkekrā promontory is not completely detached from the Massāk escarpment proper; there is a narrow land bridge between the two (beyond ZIN 904 in Fig. 9.1), but at a lower level than the hamada plateau and involving a precipitous climb. All around the promontory escarpment there are cliff-like sections limiting access to the plateau to a few points only (notably up a gully on the S side of ZIN 001 and a zig-zag path up the N side). It is interesting in this context that the natural defences of the place have been augmented on a substantial scale, for these defences have as much to say about the Garamantian projection of power as about the nature of perceived threat.

There is an unusual concentration of rock art associated with the promontory – some on the upper surfaces of the projecting spur overlooking the al-Ajāl valley, many scenes engraved on the cliff-like exposures just below the plateau of the main spur and numerous additional scenes on boulders around the skirt of the hill (only partially explored by the FP, these last have been subject to subsequent more intensive survey by Barnett).

***Ills: AF 1*, 138; *AF 2*, Figs 9.1-9.2, 9.19.**

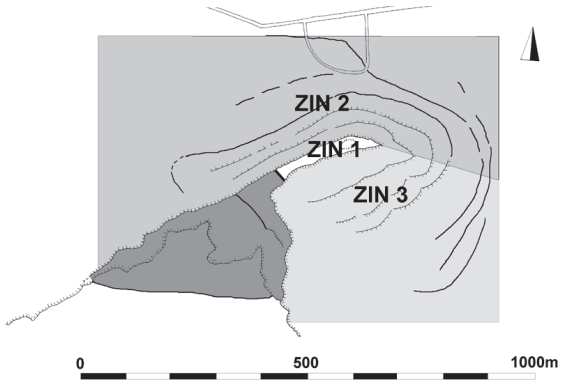


Figure 9.2. The main divisions of the Zinkekrā hill (ZIN 001-003).

ZIN 001-003 Escarpment Settlement **26°31.19/13°02.08**

The escarpment settlement of Zinkekrā can be divided into three main components: a) ZIN 001 the relatively flat-topped summit of the narrow promontory; b) ZIN 002 the terraced NW slopes, with traces of many buildings, especially on the lower gradients; c) ZIN 003 the S slopes with a number of major buildings.

ZIN 001 (promontory top) **26°31.19/13°02.08**

The earliest settlement at Zinkekrā seems to have been located on the top of the promontory, comprising a small 'village' of simple oval buildings – probably of mud and palm construction on stone footings. Late Pastoral lithics and pottery hint at potential origins in the 2nd millennium BC, though the earliest radiocarbon dates are in the first half of the 1st millennium BC (but with a wide calibrated range, see Section 40, below). As well as the house structures, there are numerous features cut or worn in the bare rock – small mortars and grinding hollows for the processing of foodstuffs or pigments, along with numerous engraved inscriptions and symbols on the flat rock surfaces.

The large group of rock art, mostly cut on the vertical cliff just below the summit of the plateau, has been separately recorded as ZIN 902.

ZIN 002 (N side) **26°31.25/13°02.02**

CMD excavated two sites at the foot of the N slopes (ZIN 011 and 013), largely published in the 1968 report. Limited later testing will be reported in *AF 3*. AMS dates from ZIN 013 indicate an early phase (Phase 0-2) of occupation in the range 930-730 BC with a later phase in the range 800-400 BC and perhaps extending later still. ZIN 011 within zone ZIN 002 on the N side of the promontory was excavated to furnish some idea of the plans of the structures on the lower slopes. The stratification was very shallow and the site appears contemporary with the proto-urban phase in the latter centuries BC (Daniels 1968: 150). The dating evidence was principally in the form of eye beads, although most of a Hellenistic flask was also found.

ZIN 003 (S side) **26°31.12/13°02.15**

An extensive group of structures, burials and other features located on the S slopes of the promontory (Daniels 1968, 183ff). These include the series of mudbrick buildings (ZIN 003.1-7) excavated by Caputo (who exaggeratedly referred to them as 'villas') and several other poorly preserved mudbrick buildings. It is thought likely that the buildings predated the large Classic Garamantian cemeteries (e.g. ZIN 109), though the introduction of mudbrick and some ashlar masonry in a terrace wall,

Figure 9.3. General view of the N side of Zinkekrā (photo: CMD 1965).

Figure 9.4. ZIN 001, the éperon barré *promontory looking NE (photo: FP 1998).*

Figure 9.5. ZIN 001, early Garamantian structures excavated by Daniels (photo: CMD 1965).

would suggest that they could be late in the Garamantian proto-urban phase (later centuries BC). **LPAST, EGAR, PUGAR, CGAR**
***Ills: AF 1*, 23, 138-41, 155, 161, 164, 179, 353; *AF 2*, Figs 9.1-9.5, 9.19, 44.15.**

ZIN 013 Cemetery 26°31.24/13°01.99
A series of Garamantian type 2b shaft burials excavated by CMD on the N lower slopes of Zinkekrā hill (within zone ZIN 002). Further details will be published in *AF 3*. A series of calibrated radiocarbon dates spans the range 2695±100BP and 2530±70BP. **EGAR, PUGAR, CGAR**
***Ills: AF 1*, 342; *AF 2*, Fig. 9.19.**

ZIN 020, 022-026 Cemetery 26°31.12/13°02.06
Large cemetery (mix of morphological Types 3 and 4) in five distinct groups on S side of promontory (Daniels 1968, 186, fig. 37). This includes clusters of type 2a/2b shaft burials, often in honeycomb pattern. There are some larger built tombs of types 3b and 4b/5b, as well as more dispersed scatters of upstanding cairns, including some type 1b corbelled examples. Some features are masked by hillwash and rockslides. Rare type 6a stele recorded, along with type 4d offering tables. ARS, 1st-2nd century AD. [1965]. **CGAR**
***Ills: AF 2*, Figs 9.6-9.7.**

ZIN 109 Cemetery 26°31.12/13°02.13
Large nucleated Type 3 cemetery at base of S side of Zinkekrā promontory. Some areas very heavily robbed or otherwise damaged by stone quarrying by the mid-1960s (Daniels 1968, 191). Most graves were type 2b stone-ringed shaft burials, although some poorly-preserved rectangular stepped tombs (type 5b) survived. The cemetery post-dates the settlement (ZIN 003.100-105) in this area. Many types of stele and offering tables found at the site, as displaced surface finds as well as still *in situ*. Test excavations showed these were quite often deeply buried in hillwash. Finds include ARS, 1st-4th century AD (see Daniels 1968, fig. 41). [1965]. **PUGAR, CGAR [EMOD]**
***Ills: AF 2*, Figs 9.8-9.12.**

ZIN 116 Cemetery 26°31.26/13°02.15
Nucleated Type 4 cemetery on hillslopes just to S of ZIN 117. Many type 2b shaft burials in honeycomb pattern. Imported finewares 1st-3rd century AD. (Daniels 1968, 153, fig. 24). [1965]. **CGAR**

ZIN 117 Cemetery 26°31.28/13°02.13
Large nucleated Type 4 cemetery on lower slopes of NE end of Zinkekrā promontory. Estimated 200-250 graves, primarily type 2b shaft burials. Imported finewares 1st-3rd century AD (Daniels 1968, 153, fig. 24). [1965]. **CGAR**

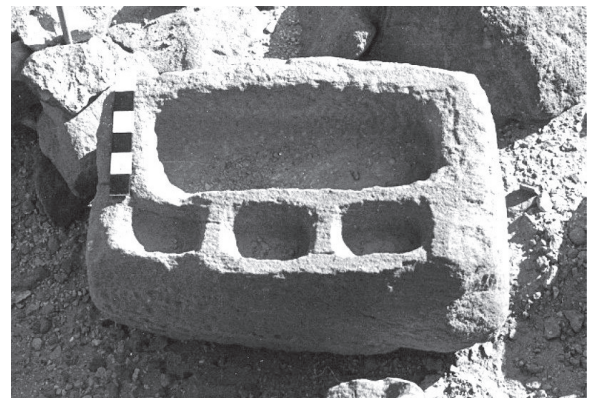


Figure 9.6. ZIN 026, type 4a offering table (photo: CMD 1965).

Figure 9.7. ZIN 026, type 6a stele (photo: CMD 1965).

ZIN 119 Wall 26°31.27/13°02.04
A length of *c.*45.6m of the terrace wall was cleared to the N of building ZIN 002.119 in order to inspect its construction. The outer face was found to vary considerably, rough blocks 1.21m x 0.52m, 0.65m x 0.25m and 0.45m x 0.17m varied with lesser infill as small as 0.31 x 0.15m in size. Rough coursing occurred, but not consistently, while some lengths were built on slightly different alignments from others. At its highest the wall survived to *c.*1m, but in other places it had vanished completely. The average width was 2.1m and the inner face was built of smaller stones than the outer. As noted on site ZIN 002.13 the inner face survived to a greater height than the outer. The whole appeared to have been haphazardly built, often in independent lengths, and possibly subsequently repaired in places. Pottery recovered in this area was Roman-date material, probably derived from cemetery ZIN 173. [1965]. **EGAR, PUGAR, CGAR**

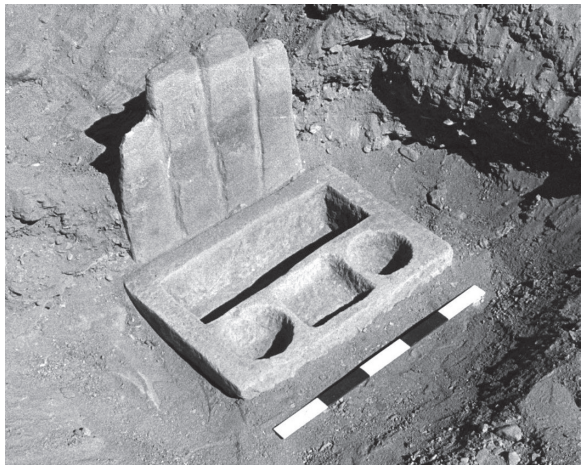


Figure 9.8. ZIN 109, type 2a stele, with type 4a offering table in situ *(photo: CMD 1965).*

Figure 9.9. ZIN 109, large type 4d offering table (photo: CMD 1965).

Figure 9.10. ZIN 109, fragments of stele of types 2a, 2c, 4, 5a and offering tables of types 4a and 4b (photo: CMD 1965).

ZIN 173 Cemetery 26°31.28/13°02.04
Small nucleated Type 4 cemetery of type 2 shaft burials just to E of zig-zag path at foot of promontory slope, just outside embankment. (Daniels 1968, fig. 4). Early ARS, late 1st-early 2nd century AD. [1965]. **CGAR**

ZIN 217- 219 Cemetery, walls 26°31.22/13°01.95
Scattered graves along edge of gully on N slopes. Some walls and Garamantian occupation deposits visible in W section of gully, predate graves. [1965]. ***GAR?***

Figure 9.11. ZIN 109, general view of the nucleated Type 3 cemetery, showing the honeycomb pattern of dense shaft burials (photo: CMD 1965).

Figure 9.12. ZIN 109, example of rectangular stepped tomb (photo: CMD 1965).

ZIN 220 Cemetery 26°31.22/13°01.95
Nucleated cemetery on N slopes of Zinkekrā promontory. Sherds include Berber Red fabric vessels and amphora, possibly late 1st century AD. [1965]. **PUGAR, CGAR**

ZIN 279 Rock art 26°31.07/13°02.06
Rock carved with two spear-carrying 'Garamantians' within area of ZIN 280. The details of feathered headdresses here is reminiscent of Egyptian images of Libyans from the Western desert (*AF 1*, 343-34) [1965]. ***GAR***
***Ills: AF 1*, 88, 343.**

ZIN 280 Cemetery 26°31.08/13°02.15
Type 3 cemetery of up to 100 graves of varied types, to SW of ZIN 003.103 (Structure 103) and upslope of ZIN 109. Some stele and offering tables. **280.1**: robbed cairn associated with ZT7 bowl. **280.2**: rough type 3a drum cairn with irregular sides but top infilled with small stones. **280.3**: several type 1 cairns with RS, flagons, amphorae and some glass sherds scattered around. **280.4**: one robbed cairn or shaft burial had 3-part type 8 stele (max.H:53cm x 90cm wide), with elements of original red-painted mud plaster still *in situ*, deeply buried in hillwash. Fragments

Figure 9.13. ZIN 280, type 2b shaft burial, with a lining of vertically set slabs (photo: FP 2001).

Figure 9.14. ZIN 280.4, red-painted type 8 (picket fence) stele (photo: CMD 1965).

Figure 9.15. ZIN 286, type 2a stele and irregular type 4c offering table (photo: CMD 1965).

of flagon in front of stele. No offering table. [1965]. **CGAR [EMOD]**
***Ills: AF 1*, 198; *AF 2*, Figs 9.13-9.15.**

ZIN 281 Cemetery 26°31.05/13°02.09
Small cemetery of *c.*20 dispersed tombs with very little pottery. [1965]. **CGAR**

ZIN 282 Cemetery
Small group of *c.*15 cairns; some amphora sherds. [1965]. **GAR**

ZIN 283 Cemetery
Small cemetery of *c.*30 type 2 shaft burials. Little pottery. **GAR**

ZIN 284 Cemetery
Scattered cairns on upper escarpment slopes, above ZIN 285. Little pottery, mainly Berber Red fabric vessels, but one sherd RS. [1965]. **CGAR**

ZIN 285 Cemetery 26°31.04/13°02.10
Cemetery of *c.*30 scattered cairns, with rare pottery. [1965]. **GAR**

ZIN 286 Cemetery 26°31.03/13°02.11
Nucleated Type 3 cemetery of *c.*70 burials, including some shaft graves; parts of E side of cemetery heavily robbed for stone. Some type 2a stele and type 4c offering tables *in situ*, part buried in rubble and hillwash. A further group of *c.*20 graves further upslope probably form part of the same unit. [1965]. ***CGAR***
***Ills: AF 2*, Fig. 9.15.**

ZIN 287 Cemetery 26°31.02/13°02.12
Cemetery of *c.*30-40 cairns to S of ZIN 286, across gully. One large cairn appeared to be a type 5a stepped drum cairn, *c.*3m across and 2m high. This has large blocks forming sides and infill of small stones. Fragment of offering table. Sherds include amphorae and Berber Red globular jars with 'tartan' decoration. [1965]. **CGAR**

ZIN 288 Cemetery
Cemetery of 20-30 cairns and shafts. Some robbed with bones exposed on surface. [1965]. ***LPAST? GAR?***

ZIN 289 Quarry?
A large detached boulder with wedge holes, probably relating to quarrying. On escarpment slopes between ZIN 287 and ZIN 288. [1965]. **GAR**
***Ills: AF 2*, Fig. 9.16.**

ZIN 290 Cemetery 26°31.02/13°02.17
Type 4 nucleated cemetery of tightly-packed type 2b shaft graves on spur on lower slopes. Sherds include amphorae, flagons and Berber Red fabric vessels. No stele or offerings tables. [1965]. **CGAR**
***Ills: AF 2*, Fig. 9.17.**

ZIN 291 Cemetery 26°31.01/13°02.17
Type 2 dispersed cemetery of often large cairns, extending high up escarpment slopes. Heavily robbed and eroded. No finds. [1965]. **PUGAR**

Figure 9.16. ZIN 289, large boulder with wedge marks indicating quarrying activity (photo: CMD 1965).

Figure 9.17. ZIN 290, nucleated cemetery (photo: CMD 1965).

Figure 9.18. ZIN 293, type 3 stone basin/offering table (photo: CMD 1965).

ZIN 292 Cemetery 26°30.98/13°02.17
Type 4 nucleated cemetery of *c.*25 shaft burials, markedly different from scattered cairns above. Heavily robbed with much surface bone, RS, amphorae and Berber Red fabric vessels. [1965]. **CGAR**

ZIN 293 Cemetery 26°30.96/13°02.17
Dispersed Type 2 cemetery, similar to ZIN 291 including type 1 mound cairns, some built into the hillside, and type 3a drum cairns. Some possible rectangular type 4b tombs. Crude offering table, 44 x 38cm. [1965]. P***UGAR***
***Ills: AF 2*, Fig. 9.18.**

ZIN 294 Cemetery 26°30.94/13°02.17
Small nucleated cemetery of *c.*15 graves on lower escarpment slopes. No stele or offering tables. [1965]. ***PUGAR***

ZIN 295 Cemetery 26°30.92/13°02.17
Small cemetery on lower escarpment slopes close to SE end of ZIN area. 30-40 type 1 cairns and one type 5 stepped tomb. [1965]. ***PUGAR? CGAR?***

ZIN 296 Cemetery 26°30.86/13°02.18
Small cemetery of *c.*20 cairns, defined by two gullies, to W of ZIN 295. Some possibly type 3a drum cairns, with tops covered with small stones. [1965]. **PUGAR**

ZIN 330 Cemetery
Cemetery with 2 clusters of shaft graves (A: *c.*50 graves; B: *c.*70 graves), upslope of terrace wall. ARS late 1st-early 2nd century AD, amphorae, imported coarsewares. [1965]. **CGAR**

ZIN 350 Cemetery 26°31.19/13°01.90
Large nucleated cemetery at foot of escarpment slopes NW of ZIN 220. Not apparently surveyed by CMD. ***CGAR?***

ZIN 351 Cemetery 26°31.15/13°01.76
Large dispersed cemetery of scattered cairns along W end of Zinkekrā escarpment slopes. Estimated minimum 150-200 cairns. Located on APs and not surveyed on the ground. ***PUGAR?***

ZIN 352 Cemetery 26°30.86/13°01.55
Large dispersed cemetery of scattered cairns along lower slopes of W end of Zinkekrā escarpment. Estimated minimum of 100 cairns. Located on APs, not surveyed on the ground. ***PUGAR?***

ZIN 900 Walls
A series of six major walls on the plateau top and four walls or embankments around the base of the Zinkekrā promontory.
***Ills: AF 1*, 138, 140; *AF 2*, Figs 9.1, 9.19-20.**

ZIN 900.0 Wall 26°31.17/13°01.98
This may be the earliest defensive feature on the top of the ZIN 001 site. It constitutes a poorly preserved wall across the neck of the promontory, *c.*30m E of the probably later wall ZIN 900.1. The structure was of two-faced construction in rough blocks, but had been extensively robbed. There is a trace of a bastion on the S side and a central approach track (suggesting an original gate?). To the W, there are the remains of rock cut trenches in front of the wall cut in from the S and N cliffs. It is unclear

Figure 9.19. ZIN 900, detailed plan of the Zinkekrā promontory, showing the sequence of defences/walls on the top of the plateau and at the foot of the escarpments (FP 1997).

Figure 9.20. The long wall ZIN 900.3 on the plateau above the ZIN 001 promontory (FP 1997).

whether the work was unfinished, or whether its function was simply to narrow the approach to the wall. (previously site 87 = ZIN 001.87). ***PUGAR***

ZIN 900.1 Wall 26°31.16/13°01.96

This is the best known and best preserved of the walls. It completely blocks the promontory from the SW, 2.8m high (CMD says 3m) x 2.07m wide (CMD 1.93) x 20.5m long. On top of the preserved wall, there is a slight trace of a parapet along the SW face (66cm wide x 10cm high). On the assumption that the parapet would originally have stood at least 1.5m high, the total height of the obstacle is likely to have been *c.*4.3-4.5m. At the NW and SE ends there are rearward projections or abutments (*c.*3 x 1.1), which presumably supported stairs or a ladder to give access to the parapet. They would also impede attempts to climb around the ends of the wall. CMD and Caputo suggested that only the NW example may have supported a stair, but the similarity of the features suggests an identical function for each. The coursing of the wall is irregular, but carefully done, with much packing of cracks with smaller stones. The wall has a packing of mud and small rubble between two faces. The SW (exterior) face is more impressively finished than the NE (interior) one. The lack of a gate might be an argument for this wall being the latest of the sequence, at a point when the use of the upper plateau was no longer defended? (previously site 97 = ZIN 001.97) ***PUGAR***

ZIN 900.2 Wall 26°31.12/13°01.96

To the SW of wall ZIN 900.1, the ground rises up a long gully, at the head of which there is a pronounced scarp giving access to the upper plateau. About half way up the rise, there is a ruinous wall running across virtually the whole of the peninsula. Although almost entirely collapsed, the wall was evidently of similar construction to walls 900.3-5, comprising two rough coursed faces of medium blocks, with a rubble infill. The wall rises up the sides of the gully to NW and SE of the channel, where

there was either a gap left or a 4m section has been lost over time. The best-preserved section was 1.7m wide x 0.85m high, the visible length *c.*70m, though it may originally have spanned the entire 100m wide promontory neck. The wall is shown on CMD's plan (1968, 118, fig. 3; *cf.* also Pace *et al.* 1951, 227, fig. 13), but has not been discussed previously. ***PUGAR***

ZIN 900.3 Wall 26°31.00/13°01.89
The upper plateau is bisected by a slightly sinuous NW-SE wall, *c.*400m long, standing 1.8 – 2m high and *c.*2-2.15m wide at the base (1.75-80 in its upper part). Construction is rough coursed blocks, two-faced with a rubble fill. The number of courses varies according to the size of blocks used and the observed height from 8-20. There are three possible gates in the wall: A is a 1.45m wide gap, with straight-built joints to either side, B is a *c.*2m wide gap, with some collapse concealing the exact edges to NW and SE, C is a rubble strewn gap, 1.25m wide, with a possible straight-built edge on the SW side. Between 'gates B and C there are two stretches of the wall with a preserved parapet walkway on the N (interior) side, though the height of the walkway varies considerable (60cm nearest to gate B, elsewhere heights 0.82-1.66m have been recorded), with parapet itself 70-80cm wide x 1m max surviving height. There are no traces of the rear abutments noted on ZIN 900.1 and 900.4, and it is likely that access to the parapet in this case was via a step or ladder directly onto the lowest section close to gate B. There is no evidence for the parapet having been built in any section other than between gates B and C. Assuming average dimensions of the original wall of 2m wide x 1.8m high x 400m long, the total volume of stone involved will have been in the order of 1440m^3. ***PUGAR***

ZIN 900.4 Wall 26°30.96/13°02.01
Two-faced drystone wall with rubble core, cutting SW-NE across a narrow neck of land near the S limits of the promontory, dimensions: 51m long, x 2.60m wide (max. at base) x 3m high. The coursing is irregular using large clocks (generally 60-70cm in length), with some packing of joints with smaller stones, especially on external (SE face). The wall stands *c.*75-80cm high at the NE end (6 courses) and 3m at the SW end (26 courses). At the NE end, there is a small gap between the preserved end of the wall and the cliff edge and a well-worn track leads across the rock plateau to this point, suggesting that this was a gate or control point. There is a well-preserved section of parapet walk (1.2-1.7m wide, 2.16m above ground) and parapet wall (65cm wide x 1m high) towards the SW, along with a rectangular internal abutment (3.8 (SE-NW) x 1.5 (NE-SW) x 2.05m high) that directly parallels the abutments on wall ZIN 900.1. There is no sign of a stair against the abutment, but it remains likely that it was used in part to support a stair or ladder. Assuming that the wall was originally of regular size, it will have had a volume of 300m^3 of stone. ***PUGAR***

ZIN 900.5 Wall 26°30.94/13°02.05
About 100m further SE along the narrow neck of land joining the Zinkekrā plateau to the main mass of the hamada, there are the remains of a further, heavily robbed wall. Despite its ruinous condition, it is clear that this was originally similar to walls 900.1-900.4, that is rough-coursed, two-faced drystone construction with a rubble core. For most of its 50m length the facing stone has been robbed out, with the 'wall' reduced to a dense line of the slumped rubble core, but traces of the original faces survive here and there, indicating a width of *c.*1.96m. The maximum preserved height is 80-95cm (the only other description is Pace *et al.* 1951, 225, figs 11, 13, who gave dimensions as 53 x 1.1m x 75cm high). There are no traces of internal abutments, though a very narrow gap exists around the SE end of the wall – again with a faint worn trackway. The ruinous state of this wall in comparison to wall 900.4 would suggest that this was an earlier structure, succeeded by the latter. ***PUGAR***

The lower embankments
The base of the slope around the NE promontory site was enclosed by a series of substantial walls or embankments (Fig. 9.19). Where these were excavated (as at site 2.13), they proved to be walls of two-faced construction with a rubble fill. Similar features are recorded at Tinda (TIN 001), al-Khara'iq (CHA 003) and Ikhlif (CLF 002, 008, 010). The scale of these features is far larger than the terrace walls scattered along the escarpment which provide platforms for buildings.

ZIN 900.6 Wall 26°31.24/13°01.98
This drystone wall is *c.*450m long and runs close to the base of the hill, partly encircling the N and E slopes. It is just over 3m wide. It appears to have been built with two good faces and a rubble core. Part of the wall was examined when CMD excavated site ZIN 002.013. This excavation revealed that the wall overlies earlier occupation levels and structures. Radiocarbon dating and the presence of eye beads suggest that the wall was built at around 300 BC (see Section 40 for C14 dates). **PUGAR**

ZIN 900.7 Wall
This earth embankment is *c.*100m long and exists today in three sections, gullying having broken its line. It is *c.*75m NW of wall 900.006 and follows the same roughly E-W alignment as the neighbouring section of wall 900.006. ***PUGAR***

ZIN 900.8 Wall 26°31.08/13°02.20
This is the longest earth embankment at Zinkekrā at *c.*800m. It encircles the N, E and S slopes of the hill. It is today broken into four sections, although gullying action in the N area has largely destroyed its line there. It is possible that, as with walls 900.006 and 900.009, at least some of the gaps in the wall may originally have been gates. ***PUGAR***

ZIN 900.9 Wall
This earth embankment encircles the E slopes and is *c.*450m in length. Today it is broken into five sections, seemingly the result of gullying although these gaps may originally have functioned as gates. ***PUGAR***

ZIN 900.10 Wall
This earth embankment is the most S of the embankments that encircle the lower slopes of the hill. It survives to a length of *c.*200m and appears to turn inwards towards the hill at its S end. ***PUGAR***

ZIN 901 Lithics scatter 26°30.90/13°02.00
Dense concentration of palaeolithic choppers, flakes and débitage *c.*100m SW of wall ZIN 900.5 on the narrow saddle of rock joining the Zinkekrā promontory to the hamada proper. The material is spread around an outcrop of silicified claystone and probably represents a primary processing area. **PAL**

ZIN 902 Rock art 26°31.19/13°02.08
This number is assigned to the dense cluster of rock engravings around the Zinkekrā promontory, many recorded by Helmut Ziegert in the 1960s (Ziegert 1969, 56 with Taf. V-XI; *cf.* also Sattin 1965). Ziegert recorded over 60 individual images. These additional notes include images not previously recorded or illustrated by Ziegert, or images that appear to differ from his publication (a complete list will be included in the section of *AF 3* dedicated to Zinkekrā). CMD also noted a rock carved with '2 Garamantians' (ZIN 279) near cemetery ZIN 280. To these may be added the famous 'Aurelius' Greek inscription (Sattin 1965, Tav.XXXVIb) on the hilltop (ZIN 001.90).

Most of these images are cut on the vertical rock face just below the summit of the Zinkekrā spur, though some occur on blocks in the main defensive wall barring the W end of the spur and others are cut on the flat surface of the spur near its E end. The number ZIN 902 was assigned as a general reference number for the rock-art on Zinkekrā. In the listing below, the direction in which animals face is indicated as follows: f. L = the animal's head is to the left from the viewer's perspective; f. R = the animal's head is to the right from the viewer's perspective.

902.1: three pecked bovines (all f. L). 902.1A: lightly pecked giraffe? (f. R). 902.2: uncertain quadrupeds (one f. L, one R). 902.3: engraved bovine (f. R). 902.4: deeply engraved bovine (f. R). 902. 5-7: At the foot of a sandstone outcrop below the flat top of the promontory, there were a series of eroded, deeply incised Libyan inscriptions, including several more than recorded by Ziegert. 902.8: pecked giraffe (f. R). 902.9-11: 'Herd' of pecked cattle, (all f. R). Eight definite bovids, including one with very pronounced horns and penis. One or two more now eroded and unclear. All sketchy pecked, Phase III/IV. 902.12: schematic, pecked Phase III goat on inside face of slab (f. L). 902.13: biconical human figure. 902.14: human figure with spear and small squarish shield? 902.15: biconical human figure. 902.16: at least two incised cow images (f. R), one now partly painted in white. Possibly Phase II. A number of eroded lines here that suggest originally considerably more detail. 902.17: engraved bovine (f. L). 902.18 'Garamantian' portrait head in profile (f. L). 902.19: human figure. 902.20: incised images showing Phase III 'warrior' figure with spear and shield with four or five ostriches (f. L). 902.21-22: large slab with many incisions and images, including an engraved giraffe and tree (f. R); engraved biconical horseman with shield (f. L). There is a large pecked bovine (f. R) between no. 21 and 22, as well as a series of vertical lines. 902.23-35: large panel of Phase III long-horned bovids, many with prominent penises, located near the terminus of promontory on N side. Panel features numerous bovines (some pecked, some engraved, some pecked and engraved) and other animals. Ziegert recorded 11 bovines, another quadruped and two ostriches, but the real total appears to be higher. (at least 10 f. L, at least five f. R). 902.36: large vertical panel at very end of promontory looking E. Schematic engraved and pecked giraffe superimposed on engraved bovine (both f. R), with series of 'sharpening' grooves below Phase III. 902.37: pecked giraffe? (f. R). 902.38: engraved bovine (f. R). 902.39: pecked giraffe (f. R). 902.40: engraved ostrich (f. R). 902.41: large vertical slab on S side of promontory, at the top. Pecked and incised giraffe with spotted markings and with long 'horns'. Possible bovid underlying the giraffe and following same lines (f. R). 902.42: engraved feet, oval shape and quadruped (f. R). 902.43: two engraved quadrupeds with horns? (one f. R, one f. L). 902.44: two engraved ithyphallic male figures, one brandishing spear? 902.45: engraved quadruped (f. R). 902.46: engraved human figure (running?) behind two engraved quadrupeds, one dog-sized, the other larger (f. R). 902.47: engraved ostrich (f. L) and pecked biconical figure with elaborate headress and possibly brandishing weapons. 902.48: two pecked bovines and a possible ostrich (all f. L). 902.49: pecked ostrich (f. R). 902.50: pecked quadruped with horns (f. L). 902.51: pecked outline of a square. 902.52/52A: two pecked ostriches (f. R) and pecked human figure with stick or spear and quadruped (f. L). 902.53/53A: pecked bovine (f. R) and pecked quaruped. 902.54: pecked bovine (f. R). 902.55-59: (26°31.16/13°01.91) - 902.55: Libyan text in rough rectangular borders. 902.56: Libyan text. 902.57 = 902.64 (wrongly mapped by Ziegert). 902.58/58A: two Libyan texts. 902.59: Libyan texts. 902.55-58: on E side of wall. These Phase IV and V inscriptions include two previously unrecorded ones; ZIN 902.63 and 902.64). On N side, series of Phase III pecked engravings including stylised giraffe (902.1A) and goats (902.1). Many now have deeper inscriptions superimposed (e.g. cow, 902.3). 902.60: engraved bovine (f. L). 902.61: pecked bovine (f. R). 902.62: number not used. 902.63: Libyan text. 902.64: on separate boulder facing out to the N, schematic Phase

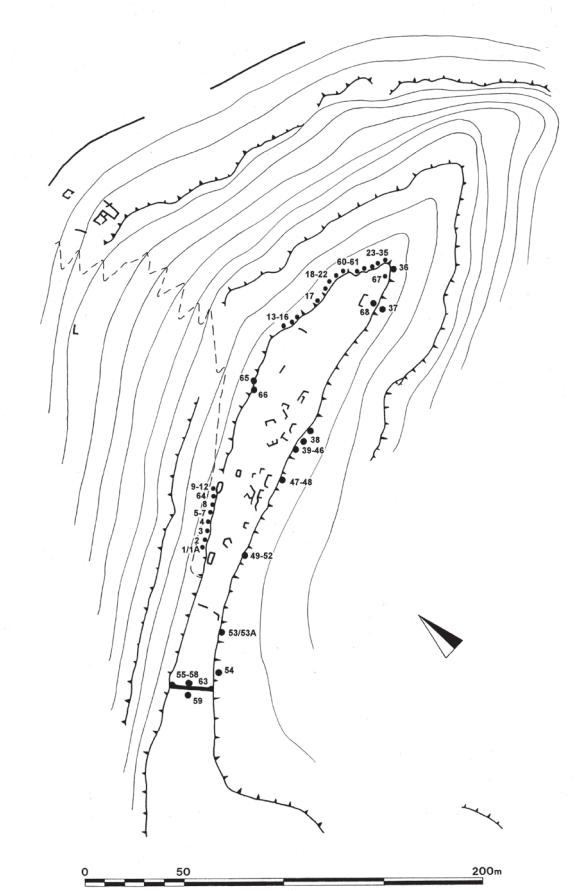


Figure 9.21. Location of the rock art, inscriptions and other engravings around the top of ZIN 001 (FP 2000, developed from Ziegert).

Figure 9.22. ZIN 902.21-22, large panel of overlain engravings (photo: FP 2000).

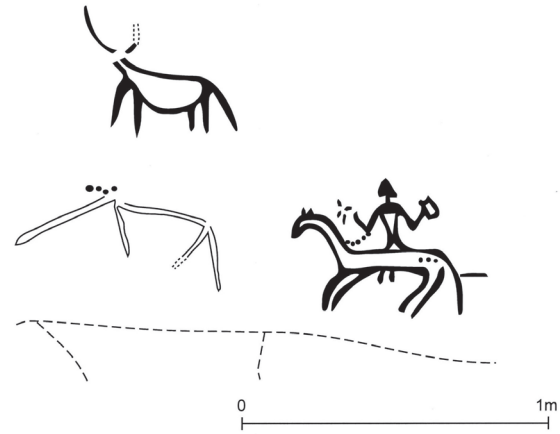


Figure 9.23. ZIN 902.21-22, detailed tracing of part of scene showing bovine and 'Garamantian' horseman (FP 2000).

Figure 9.24. ZIN 902.23-35, Large scene of bovines (photo: FP 2000).

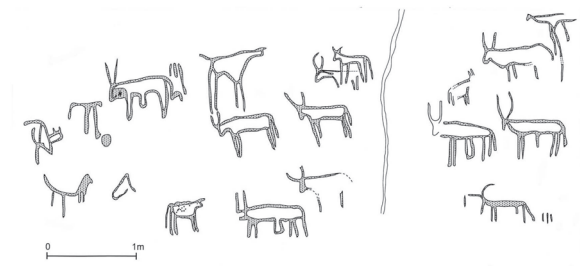


Figure 9.25. ZIN 902.23-35, tracing of bovines (FP 2000).

III pecked image of a hobbled giraffe (f. L), evidently with trapping stone (= Ziegert 1969, no. 57). 902.65: incised goat similar to 902.12 but facing out (f. R), away from hilltop. Also, several poorly visible bovines. 902.66: a number of Phase IV inscriptions and feet outlines on the top of promontory. These included Libyan inscriptions and one Arabic inscription. 902.67: on top of promontory, at terminus, a series of incised symbols – star sign, triangles and ?stylised human figures with a variety of incised lines. 902.68: close to 902.67, simple incised feet and inscriptions (Libyan, Greek (Aurelius) and Arabic). 902.69: several partly eroded figures of cows on this slab. [2000]. **PAST, GAR, GAR-EMOD**
***Ills: AF* 1, 295, 297, 324, 341, 347; AF 2, Figs 9.21-9.27.**

ZIN 903 Inscription
Libyan inscription by ZIN 900.3. [1997]. ***GAR-EMOD***
***Ills: AF 2*, Fig. 9.28.**

Figure 9.26. ZIN 902, Libyan inscription found on loose block on SW side of wall 900.1 (photo: FP 1997).

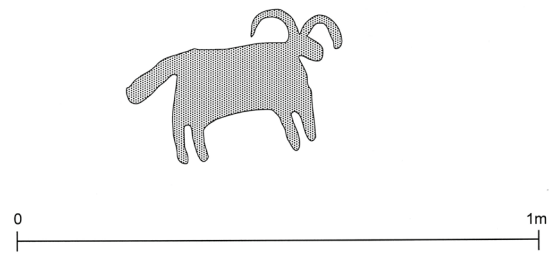


Figure 9.27. ZIN 902.65, tracing of goat (FP 2000).

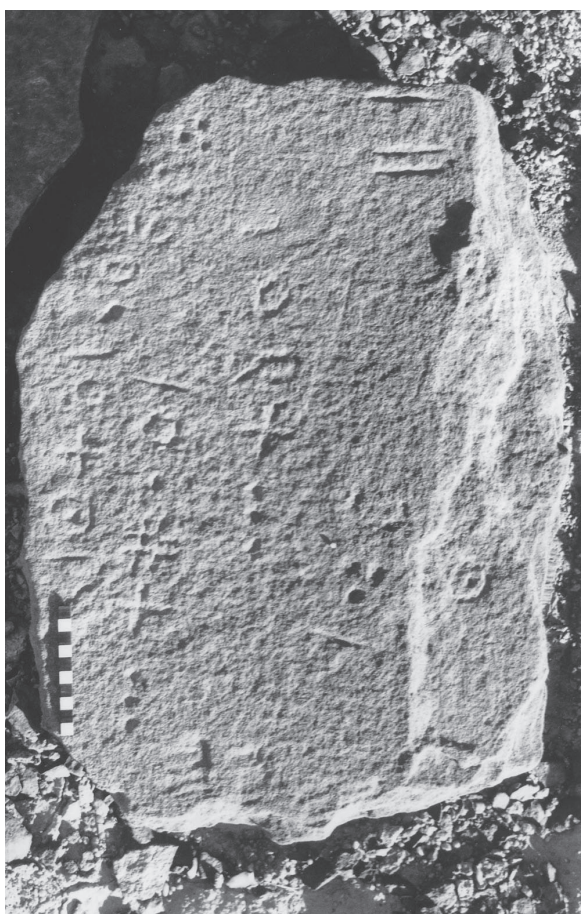


Figure 9.28. ZIN 903, Libyan inscription on a loose block found adjacent to wall 900.3 (photo: FP 1997).

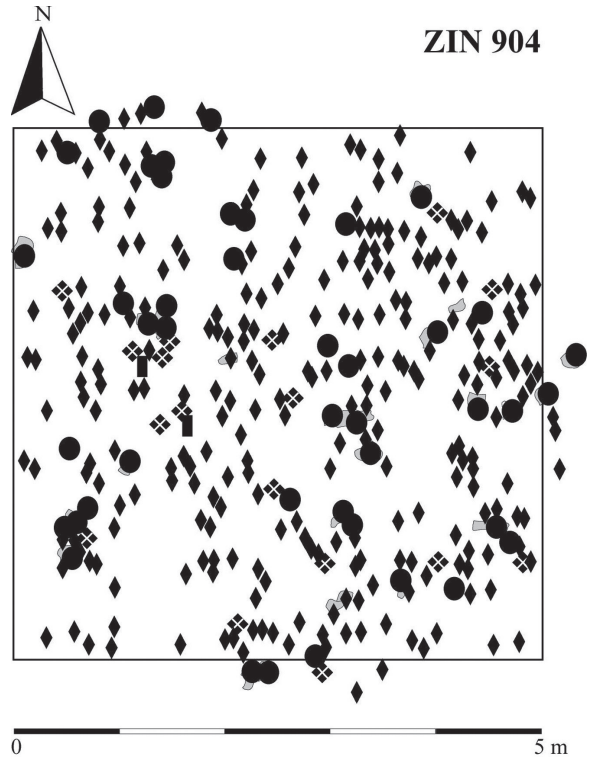


Figure 9.29. ZIN 904, detailed plot of lithics scatter (FP 1998).

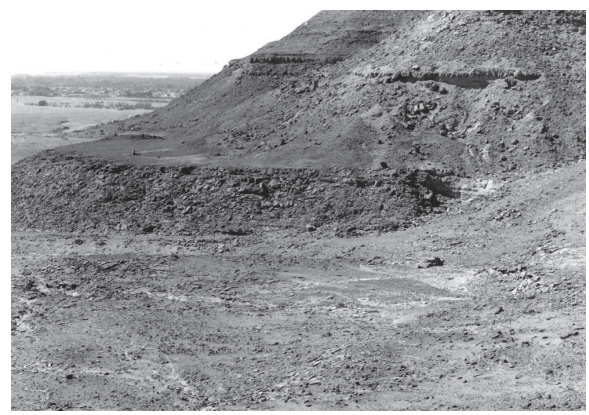


Figure 9.30. View of terrace on which lithics scatter ZIN 905 located, from ZIN 904 (photo: FP 1998).

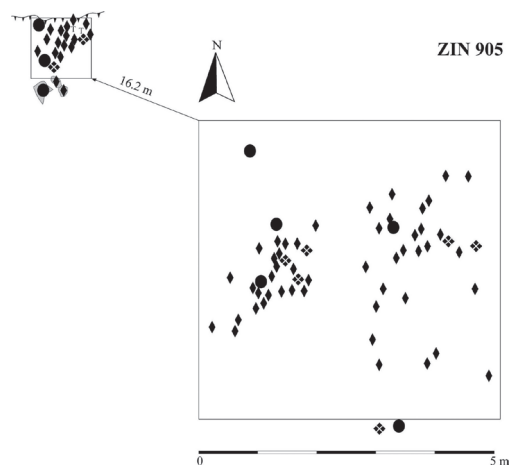


Figure 9.31. ZIN 905, detailed plot of lithics scatter (FP 1998).

ZIN 904 Lithics scatter
Lithics scatter of palaeolithic material, collected systematically (=ZNLS1). This was a basic reduction area, working black silcrete outcropping on a low ridge connecting the escarpment plateau to the Zinkekrā massif. No diagnostic tool types were present. Some Zinkekrā ware, early Garamantian pottery, also collected (Mattingly *et al.* 2000a, 242). [1998]. **PAL [EGAR]**
***Ills: AF 1*, 113; *AF 2*, Fig. 9.29.**

ZIN 905 Lithics scatter
Lithics scatter of palaeolithic and late Pastoral material (the latter including flaked stone axes), collected systematically (=ZNLS2). Situated on a terrace at the back (S) end of the Zinkekrā massif, this site was exploiting an outcrop of brown silcrete along with fossil wood. As well as basic reduction, there was a small axe-manufacturing component to the site, with a discarded unfinished axe and another roughed out axe lying *c.*16m NW of the main 5 x 5m collection grid (Mattingly *et al.* 2000a, 242). [1998]. **PAL, LPAST**
***Ills: AF 2*, Figs 9.30-9.31.**

SECTION 10. Watwāt [UATUAT] (UAT)

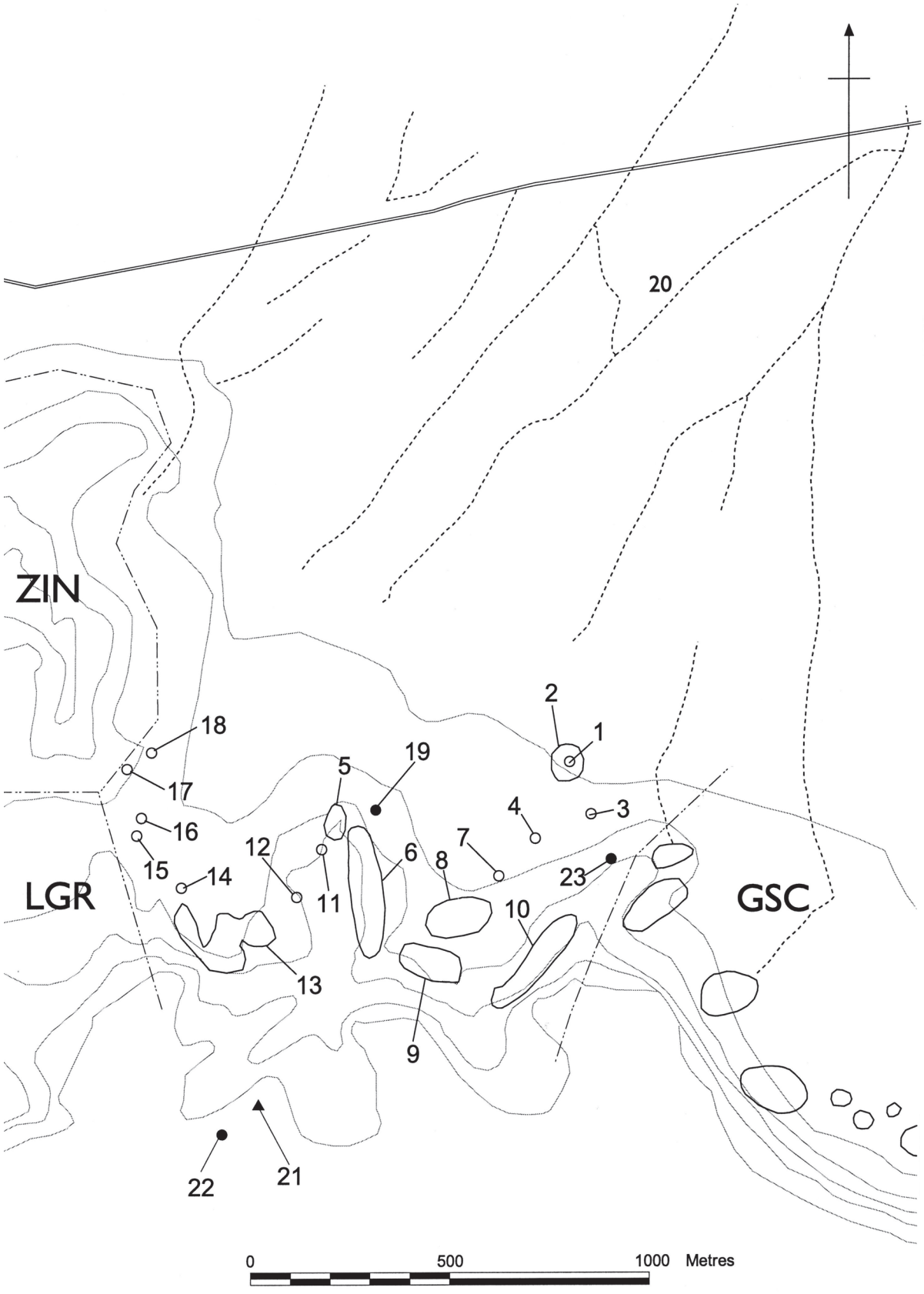


Figure 10.1. Map of sites in Waṭwāt sector (CMD/FP).

Figure 10.2. UAT 001, mausoleum E face, before restoration (photo: CMD 1958)

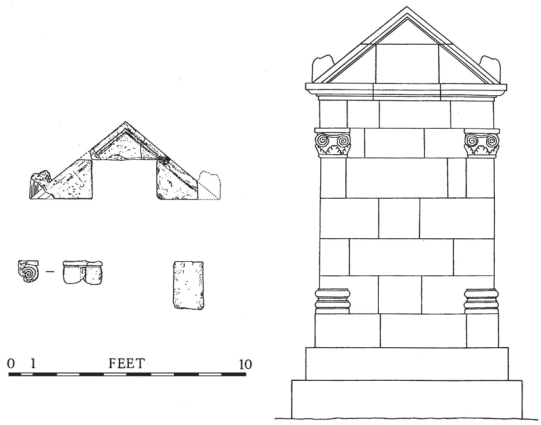


Figure 10.3. UAT 001, reconstruction of mausoleum with pediment, looking E (CMD/FP 2000).

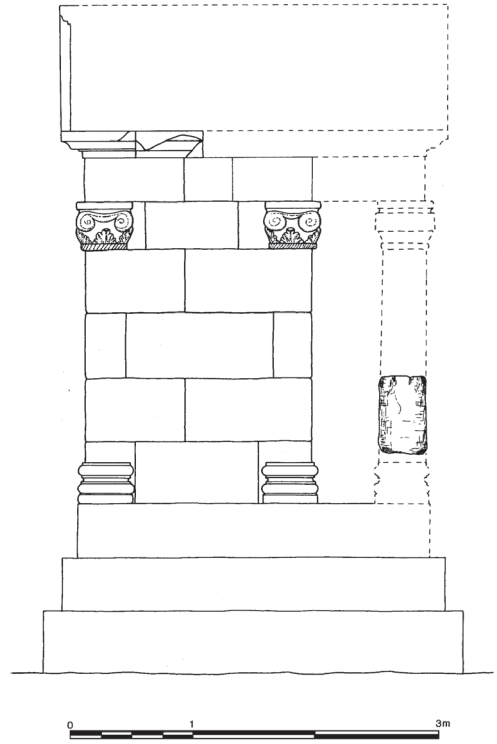


Figure 10.4. UAT 001, reconstruction of 'temple' mausoleum with proposed porch, looking N (CMD 1965).

The Watwāt (Uatuat) area, E of Zinkekrā, has taken its name from the 'Qaṣr Watwāt', a site (GER 004) which lies on the direct route between Old Jarma and the Zinkekrā area, some 2km SW of the town. It comprises a small area of the escarpment edge and sites below it, notably the famous 'Mausoleum' tomb (UAT 001), and formed a convenient unit during the more extensive survey along the escarpment S of Jarma (see also GSC sites). During 1965 the escarpment cemeteries were examined in some detail and UAT 013 was selected for a more detailed study, with a survey of its central area and the recording of the most distinctive feature of its individual units. It is the most thoroughly recorded Proto-urban Garamantian cemetery in the Wādī. Some limited revisits to the escarpment cemeteries were made in 2001.

***Ills: AF 2*, Figs 10.1, 10.15.**

UAT 001 Mausoleum 26°30.81/13°02.67

This well-known monument was noted by Hugh Clapperton and Dr Walter Oudney in June 1822 (Bruce-Lockhart and Wright 2000, 87-88) and also reported on in the mid-19th century by Barth (1857, 144-46) and Duveyrier (1864, 276). The structure was examined in 1933-4 by the Pace-Caputo expedition (Caputo 1937, 314-18; Pace 1935, 175; Pace *et al.* 1951, 252-70) and again by Ayoub in the early 1960s (Ayoub 1962, 14-16). CMD undertook a further study of the monument in 1965 and suggested a new reconstruction which incorporated a number of architectural fragments (some shown in Pace *et al.* 1951, fig.46) found in the area by Caputo (Daniels 1971a, 267-8).

The mausoleum consists of a three-stepped podium (*c.*3.25m E-W, 2.4m N-S, H: 1.30m. At the W end of the podium rose the cella of the tomb (*c.*2 x 2m, H: *c.*4m), comprising engaged pilaster bases and mixed Ionic/Corinthian capitals at each corner. The pilasters are not rendered in relief. The frieze zone above the capitals is unadorned, with a simple cornice above (Ruprechtsberger 1997, 41, 56). The structure is today consolidated with a flat top. However, CMD's study suggested a higher level to the structure, with a pediment, of which three fragments

Figure 10.5. UAT 002, aerial view of shaft burials from cemetery around mausoleum UAT 001 (FP 2001).

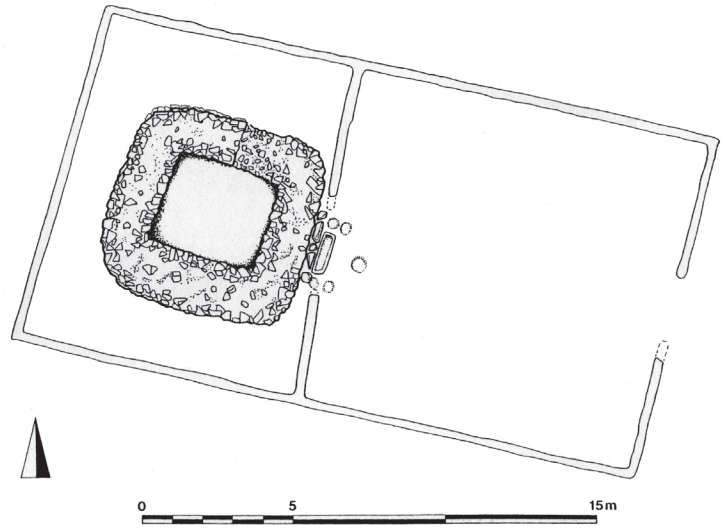


Figure 10.8. UAT 003, site plan (CMD/FP 2000).

Figure 10.6. UAT 002, looking W towards Zinkekrā (photo: CMD 1965).

Figure 10.9. UAT 003, mubrick funerary enclosure, looking SW towards burial chamber (photo: CMD 1965).

Figure 10.7. UAT 002.2, previously excavated stone-lined shaft burial (photo: CMD 1965).

Figure 10.10. UAT 003, stele on E side of tomb chamber (photo: CMD 1965).

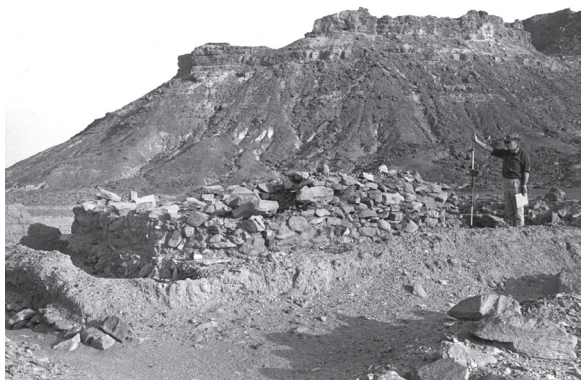


Figure 10.11. UAT 003, stone burial chamber and remnants of mudbrick enclosure wall, from SW (photo: CMD 1965).

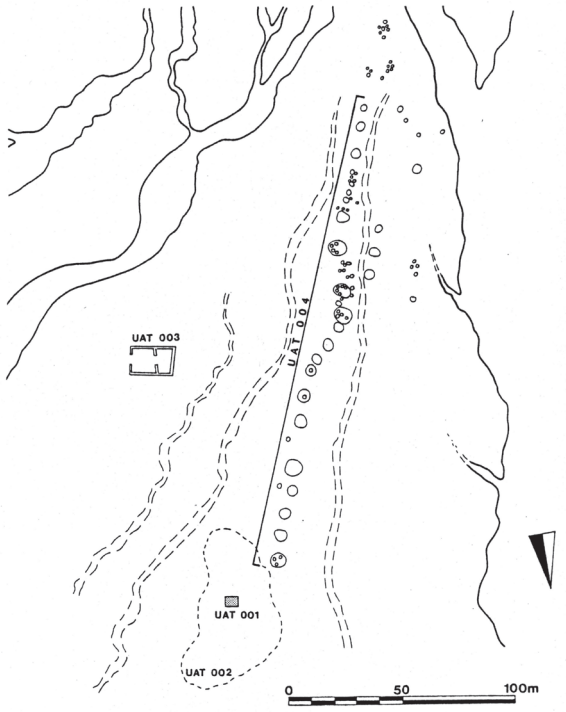


Figure 10.12. Sketch plan of area of UAT 001-004, based on AP coverage (FP 2000).

survived, above the surviving frieze and cornice. A pecked setting-out line for this pediment was noted on the top of the cornice, *c.*5cm in from the edge. On the basis of the fragments recovered by Caputo, there was almost certainly a porch on the E side, supported by two columns.
Italian excavations in the 1930s failed to locate a burial beneath the monument. It may have served as a sort of funerary temple (see *AF* 1, 189-92, for further discussion). [1965, 2001]. **PUGAR, CGAR**
***Ills: AF 1*, 12, 190-91, 217-18, 323; *AF 2*, Figs 10.2-10.4, 10.12.**

UAT 002 Cemetery 26°30.82/13°02.67
Small nucleated Type 3 cemetery surrounding the 'mausoleum' UAT 001. Caputo discovered two cinerary amphorae in shallow stone-lined cists to W side of UAT

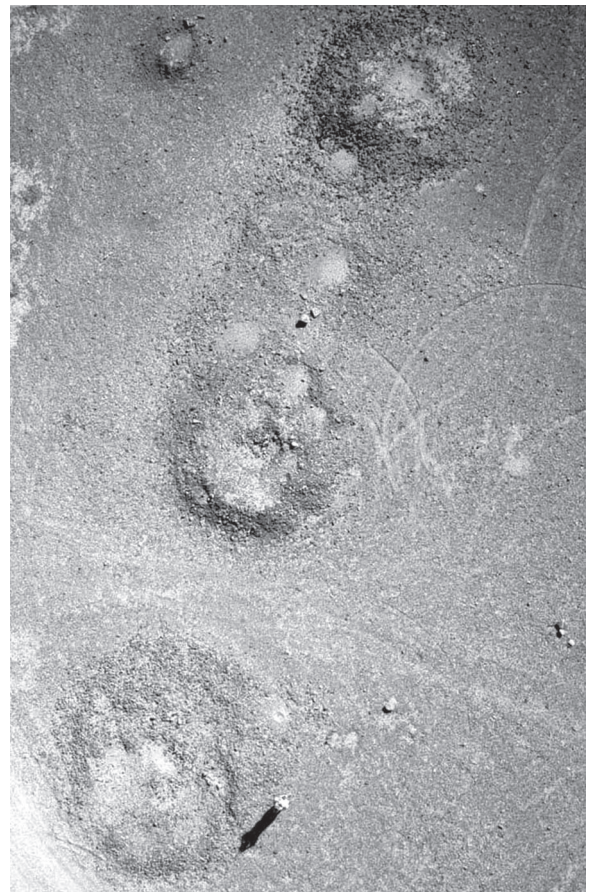


Figure 10.13. Kite air-photo of UAT 004, showing large cairns with traces of possibly secondary burials (photo: FP 2000).

001 (Pace *et al.* 1951, 252-70; 320-34), which may be part of this cemetery rather than directly associated with the 'mausoleum'. Ayoub excavated two graves here (1962, 14) and the others (primarily type 2b/2c lined shafts) appear heavily robbed and there are no upstanding superstructures. Exposed graves have large stone-lined cists or shafts, originally with corbelled roofs, with stones bonded with a mud mortar. The mausoleum appears to have been the only monumental structure within the burial area.

Surface sherds include Italian sigillata and ARS of 2nd-3rd-century date; also fragments of colourless glass with painted decoration (UAT 002/9), 2 opaque red & yellow lines with scattered dots of green and yellow between, probably from a beaker of a shape quite common in the 2nd century AD. [1965, 2000, 2001]. **CGAR, LGAR**
***Ills: AF 1*, 217-18; *AF 2*, Figs 10.5-10.7, 10.12.**

UAT 003 Funerary monument 26°30.73/13°02.71
Identified and excavated by the Pace-Caputo expedition in the 1930s (1951, 271-291), the site was replanned and rerecorded by CMD in 1965, although previous excavation and subsequent erosion had removed many features of the site. Kite air-photographs were obtained by FP in 2001.

Figure 10.14. Cemetery UAT 005, view from escarpment looking N (photo: CMD 1965).

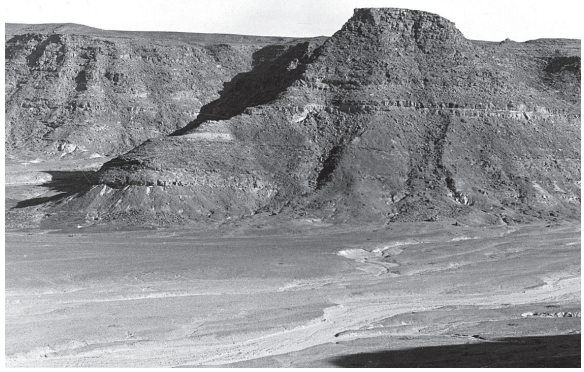


Figure 10.15. View from Zinkekrā over UAT 005-018 area (photo: CMD 1965).

Figure 10.16. UAT 007, type 3a drum cairn on escarpment slopes (photo: CMD 1965).

The core of the site was a near square mud and stone structure with rounded corners measuring *c.*6.1 x 6.1m. Within it was a square central chamber. This was built inside a large mudbrick enclosure wall set on stone rubble foundations *c.*20.5m x 11.4m, divided in two on the E side of the tomb chamber. On the E side of the tomb Caputo recorded six stele, smashed and reduced to five by 1965. In front of them was a rectangular stone basin/offering table *c.*1.46 x 0.46m, with two circular stone (offering?) bowls on either side (Pace *et al.* 1951, figs 61-3). The site appears to represent a prestigious burial, with a generous enclosure for ritual offerings to the dead, perhaps including the Libyan practice of sleeping by the tomb of powerful ancestors (*AF 1*, 179) [1965, 2000, 2001]. **PUGAR, CGAR**
***Ills: AF 1*, 179, 218; *AF 2*, Figs 10.8-10.12.**

UAT 004 Cemetery 26°30.72/13°02.64
Type 6 linear cemetery running S from UAT 001 to the escarpment edge. Unusual tomb structures, comprising low stone mound cairns 4-5m in diameter and *c.*30cm high, with multiple graves within. The line looks very similar to the linear mounds associated with foggara channels. Sherds of 1st-2nd-century AD date in area. [1965, 2000, 2001]. **PUGAR, CGAR**
***Ills: AF 1*, 217-18; *AF 2*, Figs 10.12-10.13.**

UAT 005 Cemetery 26°30.80/13°02.44
Type 4 nucleated cairn cemetery of *c.*50 type 2b shaft graves by headland. Some of shafts may have been type 2c slab-covered ones, but there are few candidates for more monumental tomb structures. Crude offering table. Sherds include Italian sigillata and other RS 1st-4th century AD. [1965, 2001]. **CGAR**
***Ills: AF 2*, Figs 10.14-15.**

UAT 006 Cemetery 26°30.70/13°02.51
Dispersed Type 2 cemetery with denser groups of cairns/burials along E-facing escarpment edge. One or more of clusters may be Type 4 nucleated type. Discrete and well-defined groups estimated at *c.*57, 6, 32, 14, 53 and a further group of seven near the latter. Surface material includes flagons and amphorae, and RS late 1st-early 2nd century AD. [1965, 2000, 2001]. **PUGAR, CGAR**

UAT 007 Cemetery 26°30.60/13°02.40
Line of tombs extending S from UAT 004, continuing line of that group. Variable cairn superstructures, with one unusual type 3a drum cairn, with low stone kerb and core of small stones and small orthostats. [1965, 2001]. ***PUGAR?***
***Ills: AF 1*, 217-18; *AF 2*, Fig. 10.16.**

UAT 008 Cemetery 26°30.60/13°02.64
Large Type 4 nucleated cemetery of *c.*400 type 2b shaft graves delineated by rubble. The cemetery comprises a dense honeycomb of shaft burials with the space between the individual rings filled with small stone and gravel. There is little evidence of differentiation in terms of size or structure of burials. Evidence for limited previous excavations (presumably those of Caputo, reported in Pace *et al.* 1951, 336-51), with spoil covering exterior stone rings of a few burials (incidentally indicating that the normal hollow ring appearance of these shaft burials does not denote recent robbing activity). Divided from

Figure 10.17. General view over cemeteries UAT 009 (foreground) and 008 (middleground), looking N (photo: CMD 1965).

Figure 10.18. UAT 008, kite air-photo of 'honeycomb' arrangement of type 2b shaft burials (FP 2001).

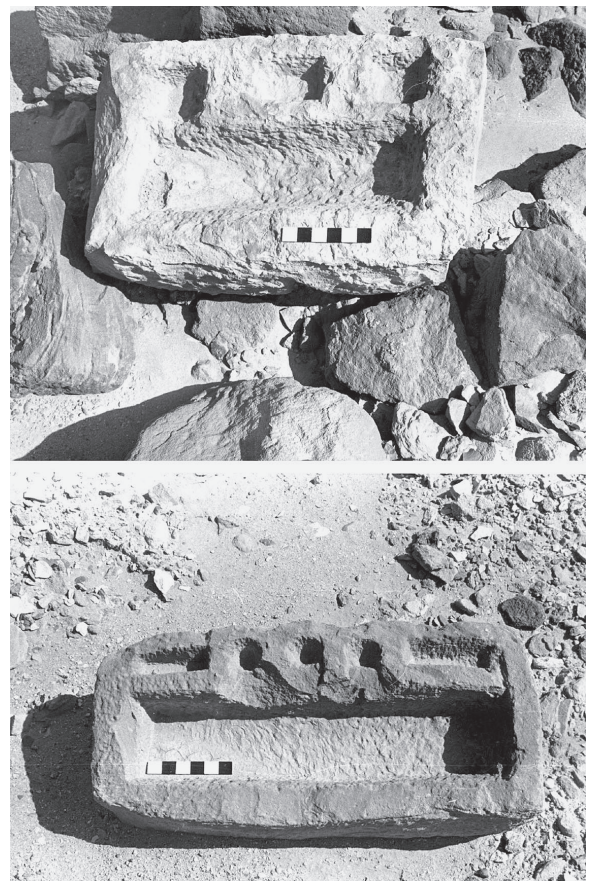


Figure 10.19. UAT 009, two type 4a offering tables (photo: CMD 1965).

Figure 10.20. UAT 013 general view, looking NW (photo: CMD 1965).

UAT 009 to W by area of large boulders and small gully. Surface pottery includes ARS and TRS, amphorae, flagons and handmade wares, lamp fragments and glass, late Hellenistic – 4th century AD. [1965, 2000, 2001]. **PUGAR, CGAR**
***Ills: AF 2*, Figs 10.15, 10.17, 10.18.**

UAT 009 Cemetery 26°30.52/13°02.59
Nucleated Type 4 (?) cemetery to S of UAT 008 (and essentially a continuation of it) with estimated *c.*100-150 tombs. Predominantly type 2b/2c stone lined shaft burials, with a few type 1 mound cairns to S. There may have been a few robbed stepped tombs (with corbelled sub-chambers) at S end too, where two type 4a offering tables noted. Sherds include ARS, amphora body sherds, 1st-2nd century AD. [1965, 2000, 2001]. **PUGAR, CGAR**
***Ills: AF 1*, 205, 214, 217; *AF 2*, Figs 10.15, 10.19.**

UAT 010 Cemetery 26°30.50/13°02.64
Cemetery along slopes towards headland with *c.*50 type

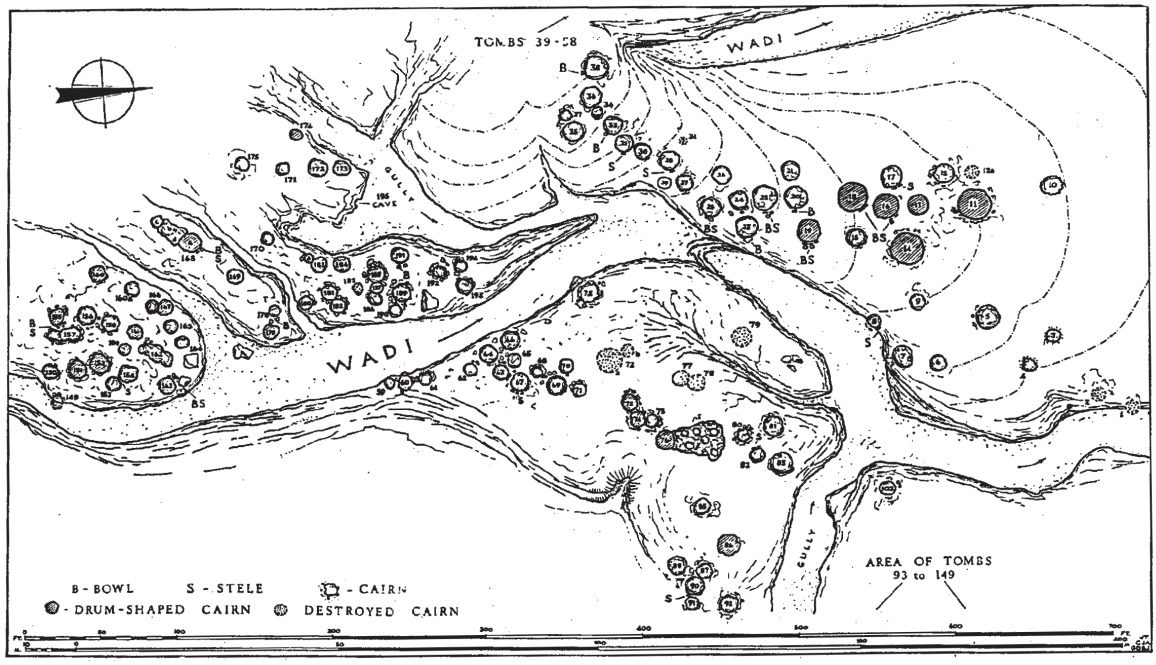


Figure 10.21. UAT 013 Overall plan of central area of Type 2 cemetery (CMD 1965).

2 shaft burials. W end with cluster above UAT 007 line of graves, with scatter of large cist-cairns to E. A single circular structure, 'UAT 010 E', may be a tomb, situated towards the end of the spur. [1965, 2001]. ***GAR?***

UAT 011 Cemetery 26°30.78/13°02.40
Compact Type 4 cemetery to W of UAT 005. Estimated 60-70 type 2b shaft burials in honeycomb pattern. Some possible type 5 stepped tombs. ARS and amphora body sherds noted. [1965, 2001]. **CGAR**

UAT 012 Cemetery 26°30.72/13°02.33
Small nucleated cemetery, with honeycomb of shaft burials. Closely adjacent to NE end of UAT 013. Some amphora and wheel made pottery observed. [1965, 2001]. ***PUGAR,* CGAR**

UAT 013 Cemetery 26°30.60/13°02.23
Large Type 5 cemetery of *c.*200 tombs in three main groups, divided by several gullies. Various forms of superstructures, some simple type 1 mound cairns and others type 3a cylindrical/drum cairns and type 3b drum tombs, the latter generally on the lower slopes with smaller cairns higher up. The most prominent cairns (tombs 11-38) formed a linear group running up the escarpment slopes between two gullies. The largest drum tombs have near-vertical sides of roughly coursed rubble *c.*1m high, with an infill and topping of small stones. There are no shaft burials in main areas, but 13.76 comprises a amalgam of at least eight separate cairns, with space between cairns infilled with small stone to create 'honeycomb' effect. Some type 1 slab stele and rough type 3 'proto-tables' were noted as well as several examples of type 2 stone bowls, mostly, though not all, placed on the E side of tombs. No examples of the fully evolved classic Garamantian stele or offering tables were recorded in the cemetery. Very little pottery, but some 'late Punic' types and a few sherds RS 1st-3rd century AD, probably from small clusters of later graves within main cemetery.
13.1: small mound cairn, with possible small slab stele on E side. **13.2**: small mound cairn, nothing on E side. **13.3**: robbed out subrectangular cairn. **13.4**: robbed out cairn. **13.5**: robbed out cairn. **13.6**: small, cairn over cist, nothing on E side. Amphora fragments in area. **13.7**: probably mound cairn, with fallen stele on E side. **13.8**: small cairn on very edge of gully, SE side collapsed. Fallen slab stele over fragment of proto-table. **13.9**: small robbed cairn, with part of proto-table on E side. **13.10**: smaller collapsed cairn, nothing on E side. **13.10a**: a very low mound of gravel chips and stones on N side of 13.10, possibly a tomb. **13.11**: large drum cairn, part collapsed, with fallen slab stele on E side. **13.12**: possible small mudbrick structure, otherwise unique in cemetery. **13.12a**: scatter of stone from destroyed cairn. **13.13**: medium sized drum cairns, possible stele. **13.14**: large but heavily robbed drum cairn. Possible small feature on E side. **13.15**: small cairn, much collapsed, with rubble masking E side. **13.16**: large drum cairn, quite well preserved. Two slab stele with crude stone bowl on E side. **13.17**: quite well-preserved cairn, two stele on E side with fragment of stone bowl. **13.18:** large drum cairn in good condition. Two large fallen slab stele in E side, possibly covering stone bowls. **13.19**: large drum cairn, partly robbed with three slab stele on E face and two small flat stone bowls. **13.20:** robbed cairn with part of stone bowl in front of E face. **13.21**: E face robbed and

Figure 10.22. UAT 013.16, drum cairn with slab stele and stone bowl on E side (photo: CMD 1965).

Figure 10.23. UAT 013.19, slab stele and type 2 stone bowls on E side (photo: CMD 1965).

Figure 10.24. UAT 013.23, crude proto-table on E side of tomb (photo: CMD 1965).

obscured. **13.22**: tall slab stele *in situ* on E face with two fragments of broken bowls close by. **13.23**: two possible slab stele and crude proto-table with three sockets *in situ*, very much larger than bowls. **13.24**: heavily robbed leaving only a ring of stones. **13.25**: well-preserved drum cairn with slab stele and broken stone bowl on E side. **13.26**: robbed cairn with no stele or stone bowls. **13.27**: robbed drum cairn, no stele or bowls visible. **13.28**: largish triangular slab stele on E side but no stone bowl visible amongst tumbled stone. **13.29**: small amorphous mound cairn. **13.30**: slightly damaged drum cairns with fill of small stones. **13.31**: possible grave shaft. **13.32**: cist grave with part of cap-stone in place. Slab stele but no stone bowl. **13.33**: cairn with proto-table on E side. **13.34**: robbed cairn reduced to a ring of stones. **13.35**: robbed E side masking any objects. **13.36**: collapsed tomb. False corbel roofing. **13.37**: cist grave added to S side 13.35. **13.38**: badly robbed cairn with stone bowl on E side. Bone fragments noted. **13.39-58**, on slopes to S, not recorded individually. **13.59-66:** small cairns, robbed. **13.67**: large mound cairn or small drum cairn with three fallen slab stele on E side. **13.68-70**: small robbed cairns. **13.71**: small cairn with possible projection on E face, robbed on W side. **13.72**: possible cist grave, very robbed. **13.72a/b**: two small stone heaps, possible graves? **13.73**: cist grave with rough wall around it. **13.74**: cist grave with rough walling around it. **13.75**: cist grave. **13.76**: large low cairn *c.*10 x 7m, possibly a cluster of five to six nucleated graves. Built against a small well-preserved drum cairn at its S end. **13.80**: small mound cairn. **13.81**: possible small drum cairn, collapsed to E. **13.82**: crude drum cairn, part collapsed, with slab stele and two stone bowls on W side. **13.83**: cairn with spread of smaller stones on top. **13.84-5**: small mound cairns. **13.86**: small drum cairns with cover of small stones on top. **13.87-90**: small mound cairns. **13.91**: small cairns with probable slab stele on W side. **13.92**: small cairn on rocky knoll. **13.93-148**: not recorded individually, but notes on: **13.100**: group of unrobbed graves to SE of 13.92, cairns with capstones. No stele or bowls. Sherds recovered from four tombs. **13.101**: group of probably three adjoining graves above 13.100, terraced into steep slope. Sherds of thin walled red amphora and flagons noted. **13.102**: more than 60 dispersed graves across gully from 13.100. No stele except 13.103. Most robbed, but six noted as intact. **13.103**: mound cairn with two fallen stele and fragments of a small bowl on E side. **13.149**: possible cairn on edge of gully. **13.150**: cairn, robbed. E face obscured. **13.151**: heavily robbed cairn reduced to ring of stone. **13.152**: intact drum cairn with fill of small stones, diameter *c.*3.6m, 75cm high. **13.153**: heavily robbed mound cairn. **13.154**: robbed drum cairn, two slab stele on SE side. **13.155**: small intact drum cairn with two slab stele and three proto-tables on E side. **13.156**: heavily robbed cairn. **13.157**: composite group of possibly three cairns, apparently unrobbed. **13.158**: robbed cairn. **13.159**: small cairn, probably unrobbed. **13.160**: small robbed drum cairn. **13.161**: robbed drum cairn, E face obscured. **13.162**: double cairn terraced into slope, E side unrobbed. **13.163**: unrobbed drum cairn, two stele and two bowls on W side. **13.164**: cairn, robbed. **13.165**: cairn, unrobbed. **13.166**: cairn, probably robbed. **13.167**: drum cairn, unrobbed., small stone bowl on E side. **13.168**: cluster of four adjoining tombs includes an intact drum cairn with proto-table and fallen stele on

Figure 10.25. UAT 013.82, part collapsed cairn with type 1 stele and type 2 stone bowls (photo: CMD 1965).

Figure 10.26. UAT 013.155, slab stele and stone bowls, after cleaning of surface (photo: CMD 1965).

Figure 10.27. UAT 013.194, slab stele and 'proto-table' of roughly hollowed stone block (photo: CMD 1965).

Figure 10.28. UAT 014, broken type 3 proto-table/basin (photo: CMD 1965).

Figure 10.29. UAT 016, cemetery from above (photo: CMD 1965).

Figure 10.30. UAT 016, robbed cairn (photo: CMD 1965).

NE side. **13.169**: collapsed cairn. **13.170:** large stone mound, possible several cairns partly terraced into spur masked by downwash. **13.171**: very small drum cairn/ mound. **13.172-173**: robbed cairn. **13.174**: small drum cairn, well preserved. **13.175-178**: small robbed cairns. **13.179**: small drum cairn, two stone bowls and stele (probably from here rather than 13.178. **13.180**: cairn. **13.181**: very robbed cairn. **13.182**: cist cairn robbed. **13.183**: robbed cist. **13.184**: robbed cairn, fragments of black amphora and small flask/bowl. **13.185**: robbed cist. **13.186**: possibly two graves, robbed. **13.187-199**: robbed cairns. **13.190**: 'bee-hive cairn', robbed. **13.191**: robbed cairn with two broken basins to E. **13.192**: robbed cairn. **13.193**: cairn, on edge of gully.

13.194: tall drum cairn with two slab stele propped against face and crude proto-table to E. **13.195**: small cave

with scatters of handmade pottery and glass fragments outside. [1965, 2001]. **PUGAR, CGAR**
***Ills: AF 1*, 214; *AF 2*, Fig. 10.20-10.27.**

UAT 014 Cemetery 26°30.65/13°02.16
Type 2 dispersed cairn cemetery of *c.*38 burials of variable construction. Some large square rubble mounds (type 4a) and type 3b drum tombs as well as smaller simple type 1 mounds of uncoursed stone. Fragments of crude 'hand' design carved on a flat stone and what may be very crude stele and stone bowl beside tombs. One stone basin/proto-table (53 x 28 x 17cm) with single depression (30 x 16 x 5cm) in centre. [1965, 2001]. ***PUGAR***
***Ills: AF 2*, Fig. 10.28.**

UAT 015 Cemetery 26°30.70/13°02.10
Scatter of *c.*20 cairns to S of UAT 016, including a few unrobbed examples. [1965, 2001]. ***LPAST? GAR?***

UAT 016 Cemetery 26°30.74/13°02.17
Nucleated cemetery of *c.*160 cairn graves on a small spur. Corbels and cist-covering slabs form pyramidal cairns. All robbed with much surface pottery. No offering tables or hands noted. [1965, 2001]. **GAR**
***Ills: AF 2*, Figs 10.29-10.30.**

UAT 017 Cemetery 26°30.79/13°02.20
Small scatter of *c.*18 graves. Sherds include some RS, 1st-2nd century AD. [1965]. **CGAR**

UAT 018 Cemetery 26°30.83/13°02.17
Dispersed scatter of *c.*36 tombs and a more compact group of *c.*100 type 2 shaft burials and corbelled cairns on edge of Zinkekrā sector. [1965]. ***LPAST? GAR?***

UAT 019 Lithics scatter 26°30.80/13°02.28
Lithic working site just below northernmost grave clusters of UAT 006, on slopes of headland. A second discrete activity area a little to NW. By 2000 this area was heavily disturbed and the site could not be located. [1965, 2000]. **PAL?**

UAT 020 Foggara group 26°31.00/13°02.40
Group of *c.*11 foggaras or tributaries, converging in dendritic arrangements to form *c.*7 main channels, running NE from the E side of Zinkekrā and the escarpment to the SE. These are more widely spaced than the clusters of foggaras to the W of Zinkekrā. Longest example *c.*1.4 km. One of these cuts through a nucleated cemetery of drum tombs ZIN 109 (Ziegert 1969, 54; cf. photo in Mattingly *et al.* 1998a, fig. LXXVb) and another at the E end of the group bisects cemetery GSC 004. The foggaras at the foot of the E side of Zinkekrā are now (1997-2000) threatened by aggregate extraction and modern rubbish dumping. Plotted from APs. [1997]. ***GAR***
***Ills: AF 1*, 243.**

UAT 021 Escarpment settlement?
A low drystone wall cutting across the neck of a prominent, steep sided promontory to the SE of Zinkekrā. There are traces of further vestigial walls/structures on the *éperon* to N of the wall, but the only artefacts noted were palaeolithic. This may be an escarpment settlement or refuge. [1997]. **[PAL], *EGAR?***

UAT 022 Inscription
An isolated Libyan inscription noted on a sandstone block lying by a camel track leading towards UAT 021. [1997]. ***GAR-EMOD***

UAT 023 Quarry 26°30.69/13°02.85
A group of at least 18 well-cut ashlar blocks, evidently abandoned by an ancient quarry at the foot of the escarpment. ***GAR***

SECTION 11. JARMA [GERMA] (GER)

Figure 11.1. Map of sites in Jarma sector (CMD/FP).

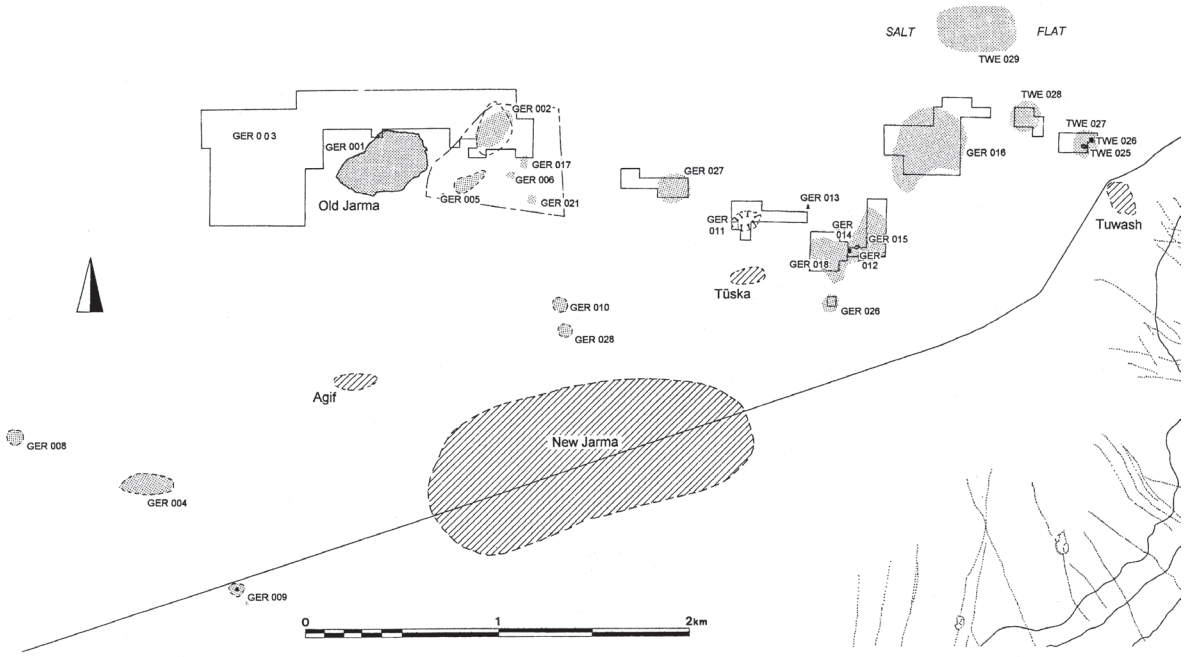


Figure 11.2. Main settlement sites located in vicinity of Jarma, with indication of location of survey grid walking (FP 1998).

The Jarma survey area covers the oasis around Old Jarma and the salt flats and sand deposits extending N to the edge of the sand sea, which is 11km distance from the escarpment at the widest part of the Jarma plain. In the early 1930s, the site of Old Jarma was already semi-ruinous and underpopulated (Scarin 1937b, 625 – 144 inhabitants, 3,000 date palms). Following the evacuation of Old Jarma by the colonial authorities in the mid-1930s, the population was concentrated in two newly built villages at Agīf (or Tahagīf) directly S of Old Jarma and Tūska to the E, but with numerous *sāniat* farmsteads scattered between them in the Wādī centre. Both the villages were largely abandoned by the 1990s following the construction of modern Jarma closer to the modern road. Sites on the S escarpment are separately recorded as Watwāt (UAT) or Jarma Escarpment (GSC) numbers.

This is one of the most important areas of the oasis, focussed as it is on the Garamantian capital at Old Jarma, and earlier research by CMD and Ayoub (1962, 20) revealed significant traces of ancient settlement at GER 002 (Sāniat Jibrīl) and GER 027 (Sāniat Sulaymān Krayda) and wadi-centre cemeteries such as GER 011 (Sāniat bin Huwaydī). During 1973, CMD carried out a walking survey over *c.*40ha on the E side of Old Jarma (Fig. 11.15) close to GER 002 clarifying the extent of that settlement while also identifying several other possible sites (GER 005-008), as well as many minor spreads of surface material.

This work was followed up with intensive survey from the start of the FP work in 1997 (Fig. 11.2, cf. also *AF* 1, 110). In addition, extensive investigation of the fringe of the sand sea revealed a cluster of Holocene lithic scatters, some associated with early pottery, fragments of grindstones and ostrich egg shell, in close proximity to a series of dried-up small lakes or marshy areas (Mattingly *et al.* 1999, 139; *AF* 1, 127-31). These sites provide an interesting and important sample of Neolithic/ Pastoral phase material.

The ruins of the town of Old Jarma are another important focus of work. CMD worked here in 1963, 1965 and 1969, following up large-scale clearance by Ayoub (Ayoub [no date], 12-26; 1962, 21-23; 1967a, 23-38; Daniels 1971a, 264-65; 1973, 37; 1989, 51-56). The FP excavations 1997-2001 have been centred here and the detailed results of those trenches along with the survey of standing buildings will in due course be reported on in *AF* 4. In the meantime, a summary of the archaeology of Old Jarma (GER 001) is provided here.

Despite the proximity of Old Jarma and other Garamantian sites such as Sāniat Jibrīl, the APs indicate that the Jarma environs have a relatively low density of foggaras, although there are substantial groups to the SW and SE. This may relate to the availability of groundwater at shallow depth in antiquity as in more recent times, and the presence of an intermittent or seasonal lake around Old Jarma itself. In the early 19th century European travellers recorded wells at Jarma 'not two feet deep, containing excellent water' (Bovill 1966, 173).

***Ills: AF 2*, Figs 11.1-11.2.**

GER 001 Urban settlement, *qasr*, wall, mosques, marabout tombs **26°32.69/13°03.79**

Old Jarma (Old Germa) has long been recognised as the Garamantian capital *Garama* and the excavations carried

out by Ayoub in the 1960s (1967a, 23-38) revealed a series of stone-footed buildings (nos 1.1-1.4, 1.8) beneath the later medieval and early modern town. Small-scale excavations and survey of the town by CMD in 1965 and 1969 and a substantial excavation (Sites G1-G4 on the map) and survey of standing structures by the FP 1997-2001, have greatly enhanced knowledge of the site. The results of this work will be published more fully in *AF* 4. An overall map of the recorded structures and brief listings are given here.

The Garamantian city appears to have originated in the latter centuries BC, initially consisting of mudbrick buildings, but later (possibly as early as the 1st century AD) of stone-footed structures of some architectural pretension – in some cases incorporating architectural elements from the Greco-Roman world (columns, capitals, pilasters, etc.). One of the most imposing buildings, with a stepped and colonnaded façade, was almost certainly a temple and several other structures may have had a public function. There is evidence that a Roman-style bath was constructed, using hypocaust brick and box flue tiles imported across the Sahara, though the building itself has yet to be located. A total of at least five phases of Garamantian structures are attested. A variety of commodities was manufactured at Garama, including iron and copper metallurgy, bead-making and carnelian working. The overall size of the Garamantian city is unclear, due to its burial beneath later structures, but the indications are that it was a substantial settlement, perhaps the equal in area of its successor (9-10ha).

Figure 11.3. The medieval kasba *and town of Jarma, looking NW (photo: FP 2000).*

The medieval and early modern structures of Jarma are interesting and important in their own right and survey and the AMS dating of a number of structures (see Section 40 below) allows something of the later urban history to be sketched out. One large building complex (*c.*25 x 20m, Building 6/7) appears to be the remains of an 11th- or 12th-century mosque (OxA-9632), and another mosque has been dated to the 13th-14th century (OxA-9578). The *kasba* was evidently built in the 15th century (OxA-9579, 9769), and the walled circuit, with D-shaped towers, was probably completed by the 16th century at the latest

Figure 11.4. Overall survey of Old Jarma, GER 001, showing location of numbered structures (FP expanded from CMD original).

Figure 11.5. Kite air-photo of building GER 001.3 (left) and GER 001.4 (right), with the FP G1 excavations at top (photo: FP 2001).

Figure 11.7. Large house GER 001.67 viewed from the kasba *looking SE (photo: FP 1998).*

Figure 11.6. D-shaped tower GER 001.13 on the town defences of Jarma (photo: FP 1997).

Figure 11.8. GER 001, sector of mudbrick housing close to the kasba*, looking E (photo: FP 1998).*

(OxA-9934). Although Jarma was no longer the regional power base that she had been in earlier times, the presence of the *kasba* and the large walled circuit (both unusual in Fazzān) attest to the continued importance of the city at the sub-regional level. By the early 19th, however, Jarma had entered a period of major decline, with a reduced and apparently impoverished population. The site was only abandoned in the 1930s, at the insistence of the Italian authorities of the time.

1.001 Garamantian ashlar building excavated by Ayoub (1967a, 23-31); **1.002** Stone building with tanks excavated by Ayoub (1967a, 31-33), probably of several phases; **1.003** Stone-footed building with stepped façade excavated by Ayoub (1967a, 35-38). Temple; **1.004** Stone building exposed by Ayoub, with underlying mudbrick phases excavated by CMD; **1.005** Wide defensive wall (Late Garamantian?) running to E of buildings 3 and 4; **1.006** and **1.007** Post-Garamantian large stone-footed building – probably 11th-12th-century mosque of town (misinterpreted by Ayoub 1967a, 35); **1.008** Stone building complex excavated by Caputo and Ayoub; **1.009** Main circuit wall of Medieval Jarma; **1.010** Tower on wall 9; **1.011** Section of stone wall to S of S side of city wall 9 (undated); **1.012** Casement buildings - wall 9; **1.013** Tower on wall 9 (dated to 15th-17th century by C14); **1.014** South gate?; **1.015** South mosque (Jama al-Kabira); **1.016** Tower on wall 9; **1.017** Tower on wall 9; **1.018** Tower on wall 9;**1.019**; East Gate; **1.020** Inner chamber of East gate; **1.021** Tower on wall 9; **1.022** Tower on wall 9; **1.023** Tower on wall 9; **1.024** Well; **1.025** Double marabout by South Gate. Sīdī Ahmad Sharif/Sīdī Abdul Aziz; **1.026** Tower on wall 9; **1.027** Town ditch (SW side); **1.028** Town ditch (NW side); **1.029** Town ditch (NE side); **1.030** Marsh/lake on E side of Jarma; **1.031** Tower on wall 9; **1.032** Tower on wall 9; **1.033** Tower on wall 9; **1.034** West Gate; **1.035** Tower on wall 9; **1.036** Tower on wall 9; **1.037** Tower on wall 9; **1.038** Tower on wall 9; **1.039** Tower on wall 9; **1.040** Tower on wall 9; **1.041** Postern gate?; **1.042** Area of mudbrick buildings (blank on CMD plan) - earlier phase; **1.043** Main E-W street (al-Morgi); **1.044** Piazza in E Jarma (market place?); **1.045** Mosque of Fatima Hadria, Jama al-Murgi/Morgi; **1.046** Small house; **1.047** Large mound of mudbrick (marabout here?); **1.048** Low lying wet area - spring?; **1.049** Well; **1.050** Low lying wet area - spring? **1.051** House; **1.052** Site of destroyed central mosque over buildings 2/3. al-Manara/al-Qṣīr; **1.053** House; **1.054** House; **1.055** House of potter; **1.056** Wasters and firing area by house 55; **1.057** Marabout: Sīdī Ahmad Sharif (cf. no 25); **1.058** Pile of querns; **1.059** Area of demolished mudbrick buildings (imperfectly mapped on CMD plan); **1.060** Garamantian offering table;

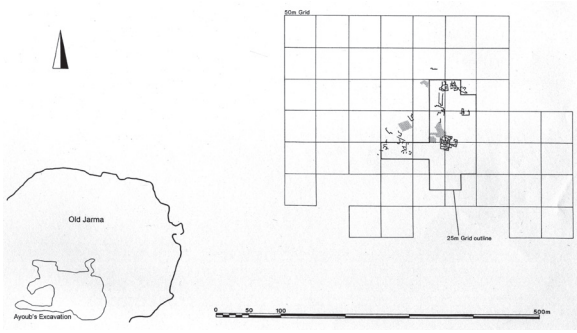


Figure 11.9. Location of GER 002, Sāniat Jibrīl in relation to the site of Jarma, with detail of fieldwalking grids of 50 x 50m and 25 x 25m units (FP 2000).

Figure 11.10. General view of present state of preservation of Sāniat Jibrīl excavations (photo: FP 2000).

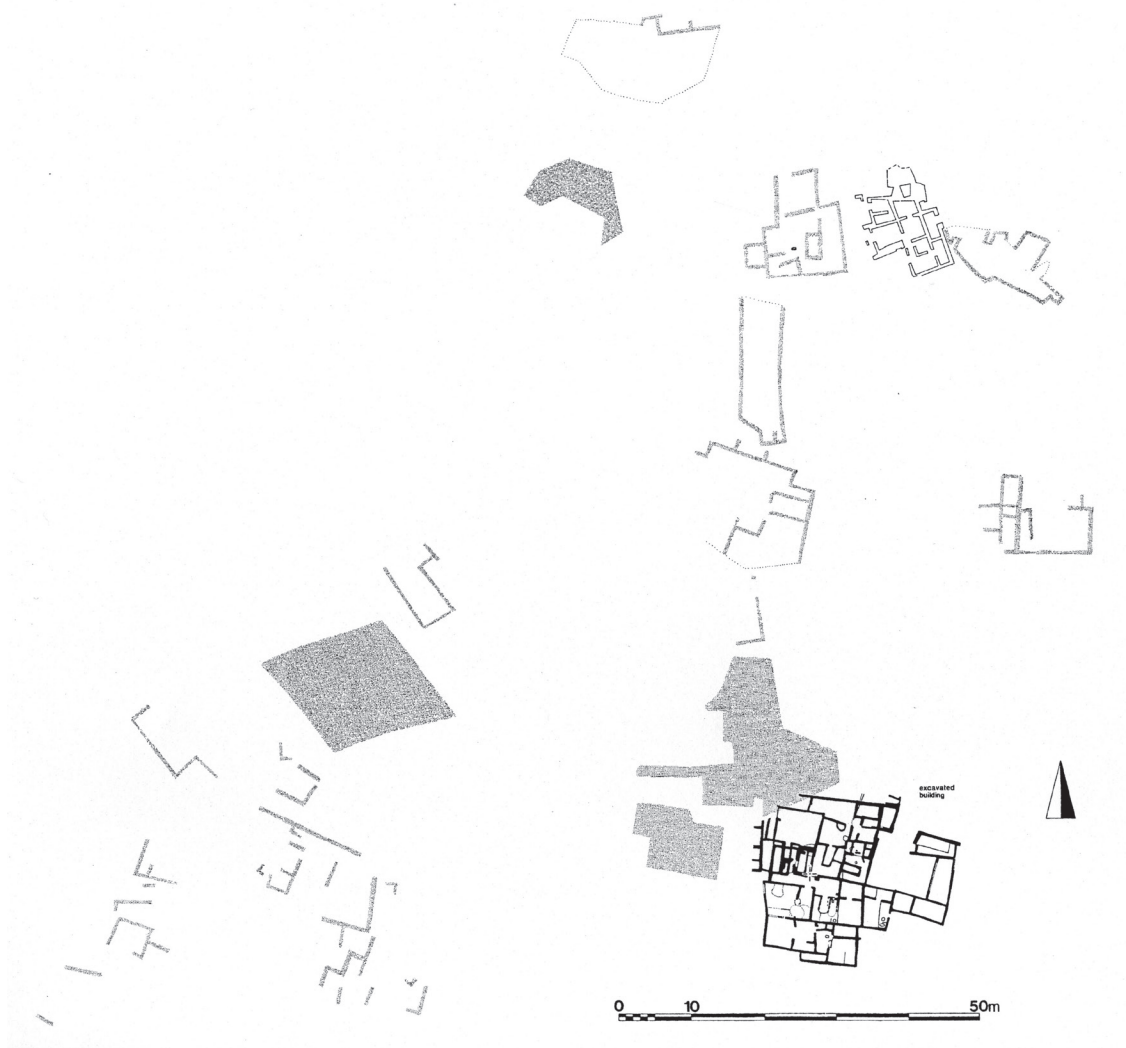


Figure 11.11. GER 002, Sāniat Jibrīl. Overall plan of excavated area and other structures visible at surface as mubrick wall lines or spreads of mudbrick (FP 2000).

1.061 Ziegert's trenches; **1.062** Low lying wet area - spring?; **1.063** Large block of houses; **1.064** Collapsed mudbrick structure; **1.065** The *kasba*; **1.066** Piazza to NE of *kasba*; **1.067** Large house near S mosque (15); **1.068** Well by mosque 15; **1.069** Low lying wet area - spring? To E and N of mosque 15; **1.070** Possible postern or collapsed wall 9?; **1.071** Small piazza; **1.074** House; **1.075** House; **1.076** Well; **1.077** House; **1.078** House;

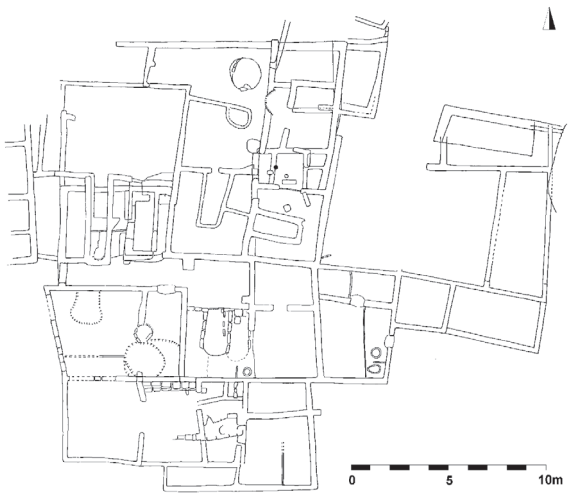


Figure 11.12. GER 002, plan of excavated features from all phases (CMD/FP).

1.079 House; **1.080** Possible Garamantian stone footed building; **1.081** Stone and mortar wall; **1.082** Stone footed building; **1.083** House; **1.084** Tower on wall 9; **1.085** Postern gate (Bāb al-Kabir?) or is this confusion with 14?; **1.086** Street with arch over (covered alley?); **1.087** Large doorway; **1.088** Cemetery area within walls; **1.089** Children's cemetery within walls (by mosque 15); **1.090** Marabout: Sīdī Abdulla; **1.091** Arabic inscription from near building 1; **1.092** Open space near tower 23; **1.093** Open space between towers 22 and 23; **1.094** Building attached to E rampart; **1.095** Building attached to north rampart; **1.096** Small piazza SW of *kasba* (marabout here?); **1.097** Small possible postern by tower 10; **1.098** Marabout: name unknown; **1.099** Open area inside west gate; **1.100** Street to east of piazza 99; **1.101** Marabout: name unknown; **1.102** Marabout: name unknown; **1.103** Piazza (open meeting place); **1.104** Marabout: Sīdī 'Alī; **1.105** Small piazza; **1.106** Wider space at road junction; **1.107** Well in NW area of city; **1.108** Well in N area of city; **1.109** Well in N area of city.

Finds from the Jarma excavations, coupled with AMS dating of key structures attest to the longevity of human activity at Old Jarma. **PUGAR, CGAR, LGAR, POSTGAR, EISLAM, ISLAM, EMOD, *ISLAM-EMOD,* [PAL, PAST]**
***Ills: AF 1*, 7, 12, 19, 31, 95, 143, 157, 163-64, 167-68, 170, 172-73, 177, 182-83, 278, 357, 359, 361; *AF 2*, Figs 11.2-11.9, 40.1.**

GER 002 Settlement 26°32.78/13°04.14
The substantial settlement site of Sāniat Jibrīl (Saniat Gibril or in the CMD archive sometimes abbreviated as SGB) lies only *c.*300m NE of Old Jarma. Described by Daniels (1973, 36; 1989, 56) as a 'suburb' of Old Jarma, it is more accurately a satellite village – now known to have been one of many such in the area. It is not certain without excavation how many buildings there were

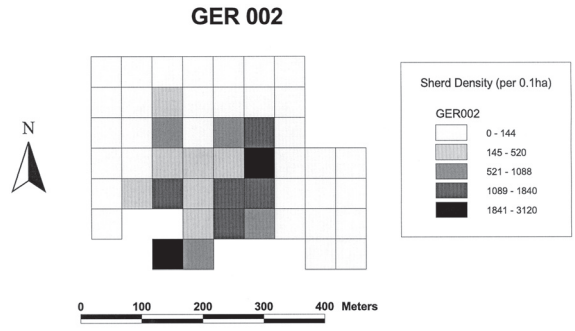


Figure 11.13. GER 002, pottery sherd density from 50 x 50m grid squares (FP 1997).

Figure 11.14. GER 002, pottery sherd density from 25 x 25m grid squares (FP 1998).

overall, though a minimum of 20-30 seems likely. As a result of survey and excavation it is undoubtedly the best-known second echelon Garamantian site, though the high level of manufacturing here (attested by a remarkable range of surface finds, *AF* 1, 114) may not be typical of all Garamantian rural villages.

Surface survey suggests the core of the site may cover up to 3.5ha, of which only a small part on the E side was excavated by CMD in 1971 and 1973 (Daniels 1971b, 6-7 – to be reported on more fully in *AF* 3). The CMD excavations revealed a complex of densely packed mudbrick buildings with at least four building

Figure 11.15. Sites recorded in the vicinity of Sāniat Jibrīl to E of Jarma (CMD/FP).

phases represented at the excavated site. The mudbrick structures evolved over time from fairly simple two- to three-room units, into larger complexes on either side of an E-W spinal wall. Several rooms feature a distinctive U-shaped arrangement at their centre, with a low threshold or benches running around a central area. The feature is also attested in the Jarma excavations and appears typical of Garamantian domestic architecture.

There is evidence for further dense clusters of houses to the N and W of the excavated complex, with perhaps more dispersed buildings or industrial activity to S. Finds related to various domestic and manufacturing activities, with numerous querns (both saddle and rotary querns), beads and bead manufacturing materials (grinders and raw materials) and loomweights. On the basis of datable imports (primarily ARS) occupation dated from later 1st century AD to the mid-4th century AD or later.

Initial survey by the FP in 1997 utilised 50 x 50m grids, but the results were rather coarse-grained. Additional surface survey in 2000 used a 25 x 25m grid collection and made a fuller record of surface traces in unexcavated areas on the N and W sides of the site. The systematic surface collections revealed substantial quantities of bead manufacturing debris, glass and metalwork, especially across the N end of the site.

Further work on metallurgical and non-metallurgical slags revealed a distinct clustering of such manufacturing debris and ashy deposits in what may have been a central plaza area N of the excavated complex. Investigation of one of the visible surface features revealed an iron working hearth (see Schrüfer Kolb, Section 43, this volume). [1965, 1971, 1973, 1997, 2000, 2001]. **PUGAR, CGAR, LGAR [PAST, EMOD]**

***Ills: AF 1*, 113, 118-22, 164, 166, 178, 356-7, 359; *AF 2*, Figs 11.2, 11.9-11.15, 42.4, 43.1-3, 44.1-44.3, 44.5-44.13, 44.16-44.17.**

GER 003 Fieldwalking grids

This number has been used to record the finds from an extensive area of fieldwalking (1997-1999) around the E, N and W sides of Old Jarma (GER 001). The work covered 54ha (216 50 x 50m grid squares) extending from Sāniat Jibrīl (GER 002) in the E, to some distance W of the town. Only 261 potsherds were counted across the entire area of GER 003 – an average density of 1.21 potsherds per grid square and 137 grid squares (34.25ha or 63.4 percent of the surveyed area) contained no artefacts at all. However, there are one or two small higher-density concentrations of material, including Roman period sherds, in proximity to Sāniat Jibrīl

Figure 11.16. GER 004, eroded mudbrick walls and towers of the large settlement (FP 2001).

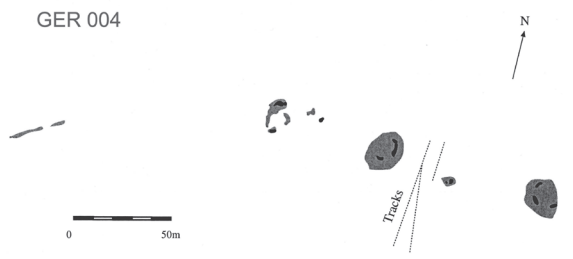


Figure 11.17. GER 004, plan of partial traces of walls and towers (photo: FP 2001).

(GER 002). Elsewhere, the survey revealed a very sparse density of ancient cultural material, especially on the N side of the town – an area that may have been a lake or marsh in Garamantian times. Some slight concentrations of artefacts W of Old Jarma may suggest the presence of a number of structures along the line of the main track leading W from the town. **CGAR**
***Ills: AF 2*, Fig. 10.2.**

GER 004 *Qasr*, enclosed settlement? 26°31.76/13°03.13

This site appears to have been a substantial Garamantian and Islamic settlement, with external mudbrick walls and a possible series of towers. These fortifications now survive only in very fragmentary form *c.*2km SW of Old Jarma. Intensive cultivation here since the 1960s has obscured much of the detail of this site referred to by 19th-century travellers. This is almost certainly Duveyrier's 'Queciret el-Watwat' ('Castle of the Bats'), his drawing representing the NW corner of the site (Duveyrier 1864, Pl.xv, fig.1) and the site also appears in other travellers' accounts of the early-mid 19th century. as a substantial mudbrick ruin lying between Old Jarma and the 'Roman' mausoleum (Bruce-Lockhart and Wright 2000, 87-89; Scarin 1937b, 625 also mentions and makes the equation between this 'Old Jarma' and the '*Qasr* of the Bats'). At some date after Duveyrier's visit, the name was evidently transferred to the nearby mausoleum UAT 001 (recorded as 'Gasr Uatuat' by CMD). Barth (1857, 144) mentioned a substantial walled settlement called 'Old Germa', to the south of the

Figure 11.18. GER 007, marabout monument (photo: FP 2001).

(then still) occupied town of (Old) Jarma (GER 001), which must be this same place.

By 1963, the walls were largely eroded to near ground level, the only large masonry elements surviving being around the NW and SE corner towers. A large well shaft lies outside the NW corner of the site. The site was relocated in 2001. Elements of perhaps four towers along one side of a large fortification still survive in fragmentary form and there is evidence of an extensive settlement, indicated by mudbrick debris and sherds in adjacent gardens, spread across an area at least 300m E-W and 100m N-S. Sherd material indicates Garamantian as well as more recent occupation in the area. [1963, 2001].
CGAR, ISLAM, EMOD
***Ills: AF 1*, 15; *AF 2*, Figs 11.16-11.17.**

Figure 11.19. GER 009, tower from largely collapsed qasr *(photo: FP 1998).*

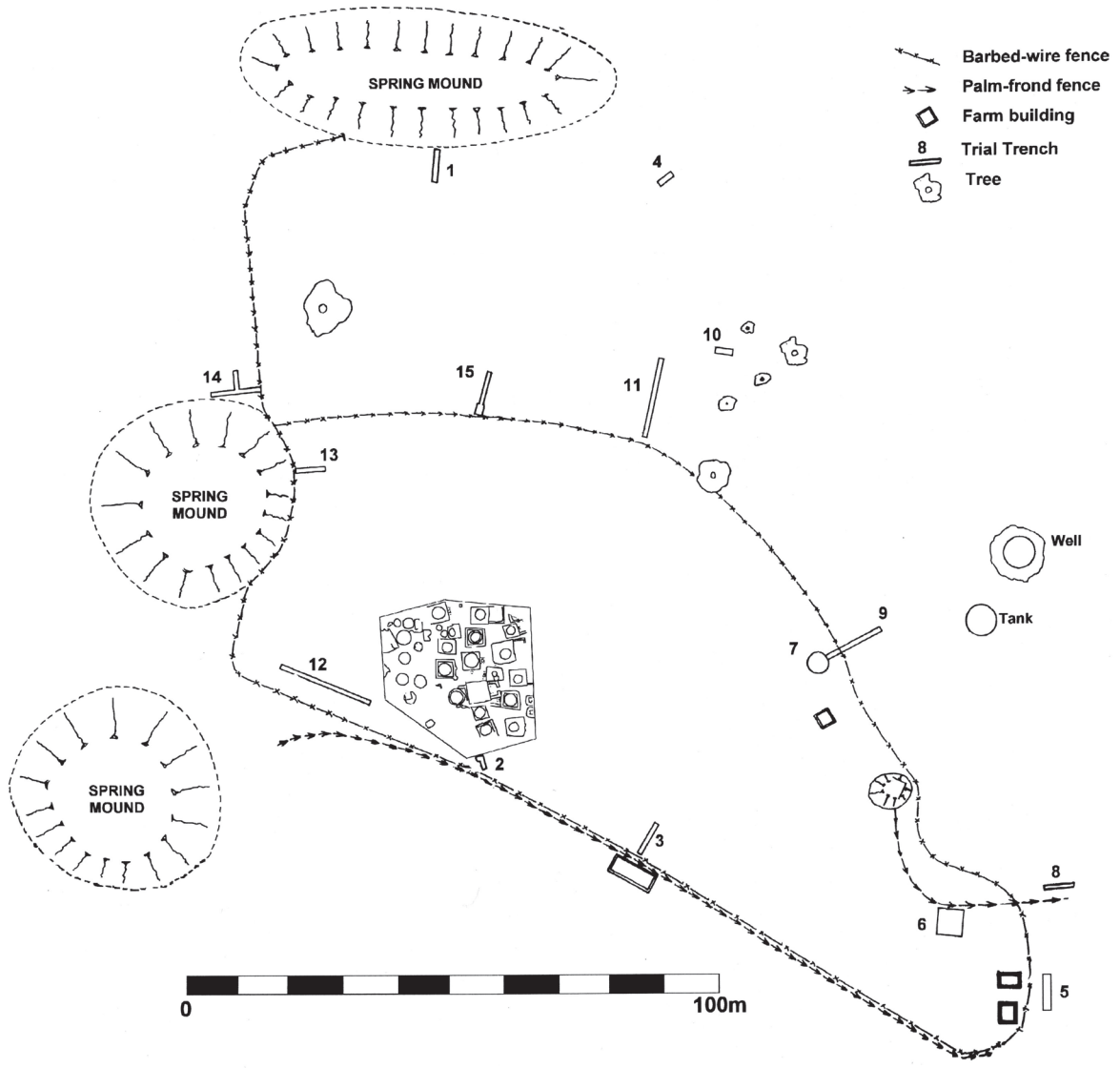


Figure 11.20. GER 011, Sāniat bin Huwaydī, location of excavated area and CMD's trial trenches.

GER 005 Settlement
Extensive spread of settlement debris, *c.*300m SSW of GER 002 excavations. Traces of mudbrick walls and abundant surface pottery, including RS, amphorae and other imports, as well as Berber Red fabric vessels. Identified by CMD survey as series of four 'sites' (sites SGB117-119, 121) extending over *c.*200m. [1973]. **CGAR**
***Ills: AF 2*, Figs 11.2, 11.15.**

GER 006 Settlement
Settlement area extending to W side of large spring mound. Surface traces of wall lines over *c.*40m E-W with small quantities of sherds and occasional lithics. (CMD site SGB123) [1973]. **CGAR? [PAL]**
***Ills: AF 2*, Figs 11.2, 11.15.**

GER 007 Marabout tomb, cemetery 26°31.77/13°03.10
A small marabout tomb, comprising a low mud-plastered base (3.5x1.5m) aligned N-S, with flags and offering pots still maintained at the S end. Small stone orthostats were included in the dwarf walls (*c.*25cm high) that mark the E and W edges of the monument. Around the marabout tomb a number of head and footstones of a small cemetery can be seen. Judging by the distance between these stones (generally *c.*1m), these appear to have been children's graves. The cemetery is located in close association with the prominent mudbrick walls of GER 004 and may have been either just inside or just outside the walled Islamic enceinte here. [2001]. ***ISLAM-EMOD***
***Ills: AF 1*, 180; *AF 2*, Figs 11.2, 11.17-11.18.**

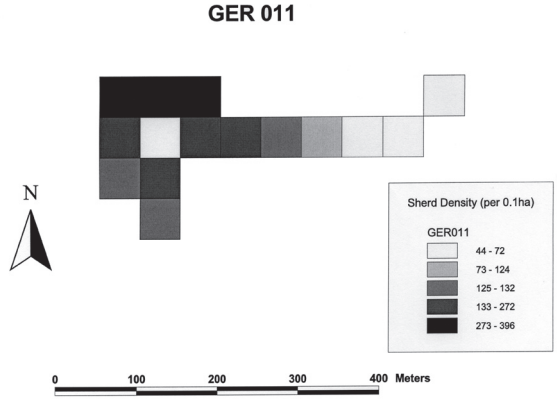


Figure 11.21. GER 011, distribution of pottery within 50 x 50m grid squares on E half of cemetery mound (left) with diminishing values in transect to E (FP 1999).

Figure 11.22. GER 011, view of CMD's excavations, showing mix of rectangular and drum tombs (photo: CMD 1973).

Figure 11.23. GER 011, excavation of tomb 12 (photo: CMD 1973).

GER 008 Settlement? 26°31.90/13°02.66
A notable concentration of wheel-made pottery (including ARS and amphorae sherds) within the oasis. Most sherds visible on uncultivated area *c.*30x30m between gardens, but sherds continue in neighbouring gardens across 100m+. This is a possible Garamantian settlement site, situated *c.*400m W of GER 004. **LPAST, CGAR**
***Ills: AF 2*, Figs 11.2, 11.15.**

GER 009 *Qasr*, settlement 26°31.54/13°03.34
A *c.*7m high tower is the NE corner of what was once a rather larger structure, but the building has been heavily bulldozed at various times (the old Jarma-Ubārī road runs directly on its S side). A strip of demolished mudbrick extends obliquely from the standing structure, towards two large fragments that may indicate the SW corner of a building that was originally *c.*14 x 13m. The walls were 1.5m thick, with traces of a slight batter on the exterior and a narrow stairwell or corridor built within the thickness of the wall. The yellow mudbrick is closely similar to that at a number of other *qasr* sites in the vicinity (e.g. GER 014) and the presence of small windows (*c.*35 x 25 cm) and a staircase running up the inside of the wall are paralleled at other *qsur*. Surface pottery indicates Garamantian origins for the settlement here. **CGAR, ISLAM**
***Ills: AF 2*, Figs 11.2, 11.19.**

GER 010 Settlement? 26°32.29/13°04.34
Sherds scatter *c.*50 x 50m including Roman-period material. Exact nature of 'site' uncertain. Possibly continues into GER 028. [1998]. **CGAR**
***Ills: AF 2*, Figs 11.2, 11.15.**

GER 011 Cemetery 26°32.52/13°04.90
Garamantian oasis-centre cemetery of Sāniat bin Huwaydī (Saniat Ben Howedi, sometimes referred to as SBH in the Daniels archive), scene of successive excavations by Ayoub ([no date], 27-50; 1962, 20; 1968c; Ayoub and Abdel Salem 1968; Ayoub and el-Kilani 1968a/b), Daniels (1973, 39; 1977, 5-7; 1989, 50, 53-54) and Ziegert (unpublished). CMD excavated *c.*50 burials here between 1973 and 1977. The site is situated *c.*3km E of Old Jarma and a few 100m from the Garamantian settlement of Sāniat Sulaymān Krayda (GER 027). It is recognisable as a low mound of decayed mudbrick rising above the level of the surrounding gardens. Only about 20 percent of the area of the mound has been excavated.

The Type 8 cemetery forms a low subcircular mound *c.*100m across and is densely nucleated, probably the result of successive infilling within a restricted funerary area. The various excavations have revealed superimposed burials in possibly three phases, spanning the later 1st - 4th century AD. Accumulated aeolian deposits around tomb superstructures preserved many of their features. Tombs included type 3b circular, type 4b rectangular and square superstructures built of plastered mudbrick with numerous well-preserved offering tables and stele, some covered with red-painted plaster. Some of the earlier large rectangular tombs had built 'forecourts' on the E or W side, within which were set stele and offering tables, butted against the tombs. The type 5 stele, generally painted bright red (Ruprechtsberger 1997, 46, 54), are of an unusual variant (the 'picket fence') with four pointed stones set in a row. The offering tables also demonstrate some unusual (flamboyant) variants on the normal styles.

Figure 11.24. GER 011, tomb 15 (photo: CMD 1973).

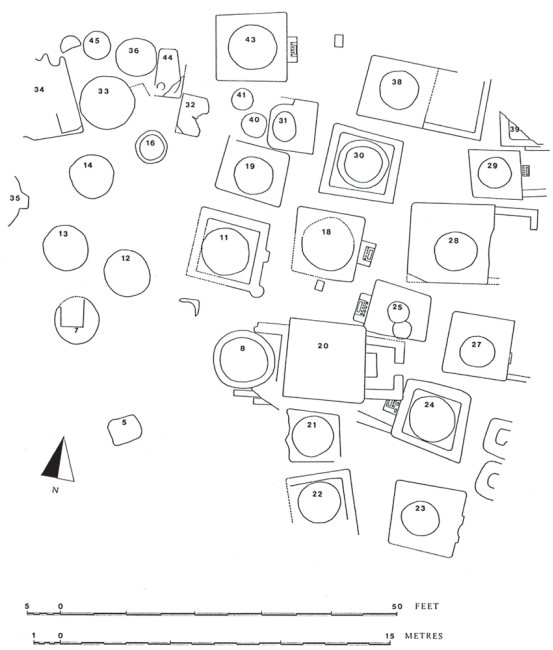


Figure 11.25. GER 011, plan of later phase of cemetery (CMD 1977).

While many of the tombs excavated by CMD were heavily robbed, some burials were intact and the cemetery has produced substantial collections of pottery and other artefacts. These include a large number of imports from the Roman world, including Italian and African Red Slip wares, lamps, glass and faience vessels and amphorae. The cemetery appears markedly different from other wadi-centre sites both in the forms of burials and often abundant material deposited with them.

The CMD excavations will be published in fuller detail in *AF* 3. Excavation by CMD 1973/1977. Fieldwalking and further survey was carried out in 1999/2000. PUGAR, CGAR, LGAR [EMOD]

***Ills: AF 1*, 25, 208, 223-24; *AF 2*, Figs 11.2, 11.20-11.25.**

Figure 11.26. GER 013, isolated mudbrick structure, possibly an eroded pyramid tomb (photo: FP 1998).

Figure 11.27. GER 014, qasr, *looking E (photo: FP 1998).*

Figure 11.28. GER 014, interior of qasr, *looking W (photo: FP 1998).*

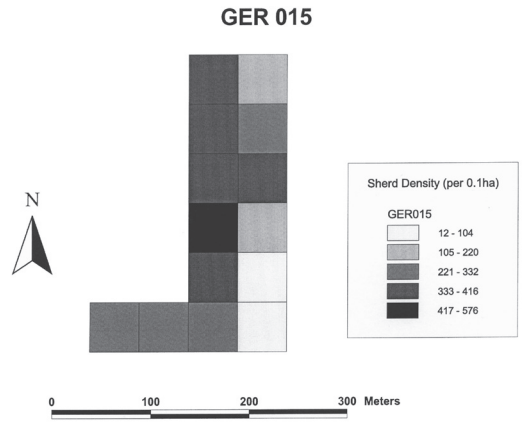


Figure 11.29. GER 015, area of 50 x 50m grid survey, by qasr *GER 014 (FP 1998).*

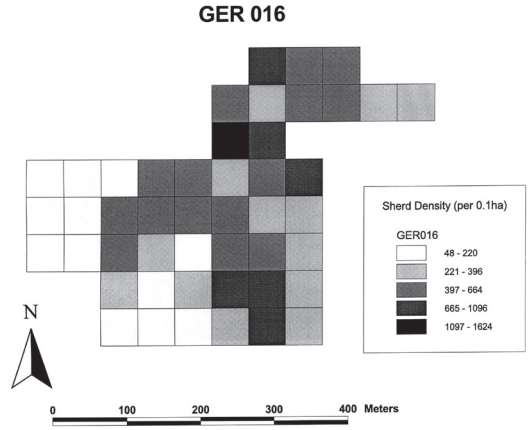


Figure 11.32. GER 016, expanded grid survey, showing pottery distribution from Garamantian settlement (FP 1999).

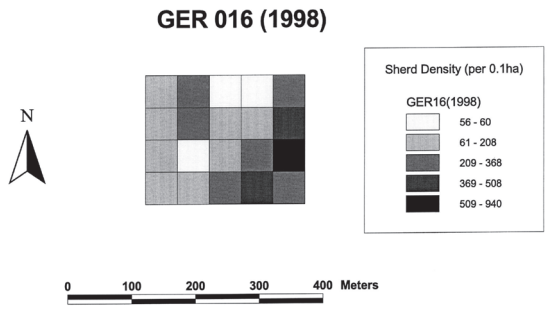


Figure 11.30. GER 016, initial grid survey area (50 x 50m grids), showing pottery distribution from Garamantian settlement (FP 1998).

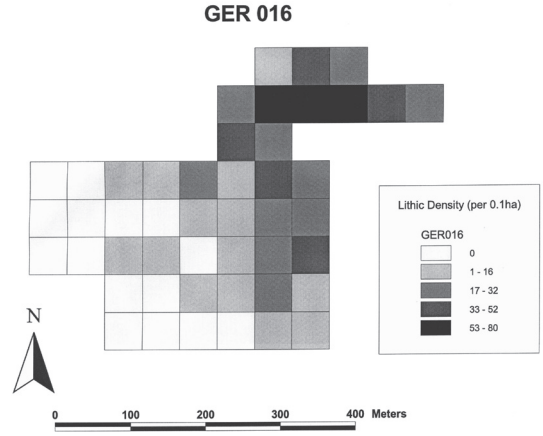


Figure 11.33. GER 016, expanded grid survey, showing lithics distribution from Holocene activity/campsite (FP 1999).

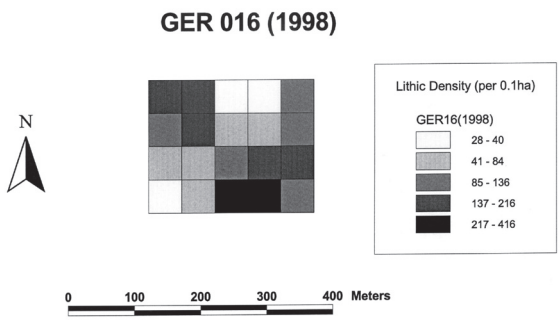


Figure 11.31. GER 016, initial grid survey area, showing lithics distribution from Holocene activity/campsite (FP 1998).

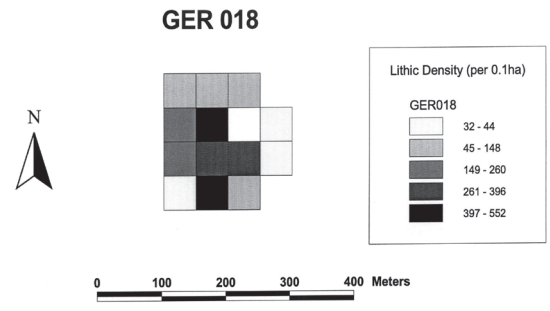


Figure 11.34. GER 018, density distribution of lithics scatter in area of 50 x 50m grids to W of qasr *GER 014 (FP 1998).*

GER 012 Well 26°32.67/13°05.28
Well to E of GER 014 with part of its water-collecting palm channel still *in situ* and in use into recent times. [1998-99]. ***ISLAM-EMOD?***
***Ills: AF 1*, 370.**

GER 013 Funerary monument? Cemetery (pyramid)? 26°32.76/13°05.24
A possible pyramid tomb situated *c.*200m NE of GER 011. Solid mudbrick structure (*c.*1m square, H:*c.*1m). A slight mound of collapsed material suggests that the structure was once somewhat larger. This may have been part of a larger cemetery. [1998]. ***CGAR***
***Ills: AF 2*, Figs 11.2, 11.26.**

GER 014 *Qasr* **26°32.46/13°05.25**
A rectangular tower-like *qasr*, *c.*17 x 10m, standing to 7.6m high, built with fine yellow mudbricks. There are traces of additional walls at a lower level on the N side and these are probably secondary. The W side of the structure is best preserved, with traces of some internal sub-divisions. A 1m-wide space between the outer N wall and an internal E-W wall may represent a choked stairwell. A series of six small windows (*c.*70cm square) are preserved near the top of the outer wall and, if continued around the rest of the building – where the walls are less well preserved – would have provided excellent all-round visibility. A lower area in the centre of the S side probably marks the original entrance into the *qasr*. In 1999, a human skull and mandible was found eroding out of the fill of the room to the W of the entrance and this probably represents a secondary (and possibly fairly recent) burial in the structure. The building is apparently known today as Qaṣr Tuwash al-Gharbī (west). [1965, 1999]. **CGAR**
***Ills: AF 1*, 152; *AF 2*, Figs 11.2, 11.27-29.**

GER 015 Settlement? 26°32.46/13°05.36
Fieldwalking to the E and NE of GER 014 revealed a fair density of pottery and some mudbrick on the surface. This included some Garamantian material and may indicate an earlier settlement at this location. The sherd pattern suggests an area of activity or settlement that extended some way towards GER 016. [1998, 1999]. **CGAR, LGAR, ISLAM, EMOD**
***Ills: AF 2*, Figs 11.2, 11.29.**

GER 016 Settlement, lithics scatter 26°32.67/13°05.44
A large area of sherds and decayed mudbrick including visible traces of several buildings. Holocene lithics also collected in this area. This site was identified towards the end of the 1998 season between Sāniat bin Huwaydī and Tuwash. Twenty grid squares were fieldwalked (5ha) and a high density of potsherds and (Holocene-type) worked lithics (débitage and tools) were counted and/or collected. A further gridded collection overlapping with the first was made in 1999 to increase the representative sample from this large and rich site. In 1998, 1,310 potsherds were counted; an average of 65.5 potsherds per grid square, with no grid squares without potsherds. The spatial distribution of potsherds suggests some concentration in the S and E of the surveyed zone. A few vestigial wall lines were visible at the surface, but most of the site here appears buried beneath modern gardens and spring mounds. There is a strong component of Garamantian sherds and other surface finds resemble those from GER 002, including evidence of bead and metalliferous production (see *AF* 1, 114 table 4.3).

The total lithics count in 1998 was 702; an average density of 35.1 pieces per grid square. This density was remarkably high in comparison with lithic counts encountered at other sites in the Wādī during the 1998 season. However, further lithics collection in 1999 totalled only 227 items from 48 grids (4.73 per grid, indicating that the high density related to concentrated activity on part of the site only. Very nearly, the spatial distribution of lithics débitage and tools mirrors that of the potsherds, with one concentration in the in the S and E of the area and another in the NW corner. It is possible that the Garamantian settlement here succeeded on a Pastoral one close to a water source. There are also a few Pleistocene and 'Epipalaeolithic' pieces and hints at post-Garamantian activity too. The site would repay further examination. [1998, 1999]. **PAL, PREPAST, PAST, LPAST, PUGAR, CGAR, LGAR, EISLAM, ISLAM**
***Ills: AF 2*, Figs 11.2, 11.30-11.33, 42.5-6.**

GER 017 Settlement
Settlement area *c.*100m NNE of GER 006 on low mound. Traces of mudbrick and abundant amphorae sherds, some RS and occasional lithics. (CMD site SGB127) [1973]. **CGAR**
***Ills: AF 2*, Figs 11.2, 11.15.**

GER 018 Lithics scatter 26°32.45/13°05.25
A quite dense scatter of lithics, primarily Holocene material, to the W of GER 014. The material spread across *c.*100 x 100m and was collected by systematic sherding. Surface collections include a large amount of knapping debris; a burin and an endscraper are the only tools although a flake off a polished stone axe also occurs. This is a medium term campsite of mid-Holocene date affected by deflation; many aeolised pieces are present. There is some material that might be characterised as Epipalaeolithic [1998]. **PREPAST, PAST, MPAST [CGAR]**
***Ills: AF 2*, Figs 11.2, 11.34.**

GER 019 *Qasr*?
Large near-square mound or enclosure, W of GER 004. Located on APs, not otherwise surveyed. ***GAR-ISLAM?***

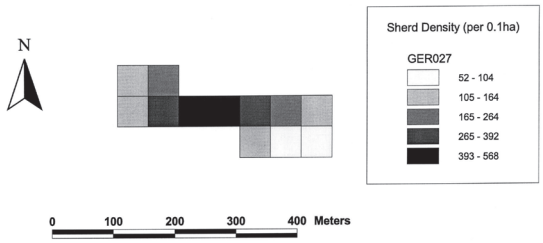


Figure 11.35. GER 027, Sāniat Sulaymān Krayda, pottery distribution within 50 x 50m grid survey over Garamantian settlement (FP 1999).

GER 020 *Qasr*? Enclosure?
Probable *qasr* structure *c.*100m W of GER 019. Small central tower and outer enclosure, estimated *c.*30m square. identified on APs only. Not surveyed on ground. ***GAR-ISLAM?***

GER 021 Settlement
Small settlement *c.*150m SE of GER 006 in open area NW of large Sāniat. Low mound of collapsed mudbrick of uncertain date. Very few sherds in area. (CMD site SGB125) [1973]. ***GAR-ISLAM?***
***Ills: AF 2*, Figs 11.2, 11.15.**

GER 026 Cemetery? 26°32.31/13°05.21
Settlement?
Pottery scatter and mudbrick debris *c.*200m to SE of GER 014. The area is partially disturbed by modern tracks and earthmoving, but the material is situated on a slightly raised mound. It is possible that it represents a small cemetery area, rather than a settlement. (Grab collection and one systematic 50 x 50m grid). There is some lithic material present, including both Acheulean and Holocene

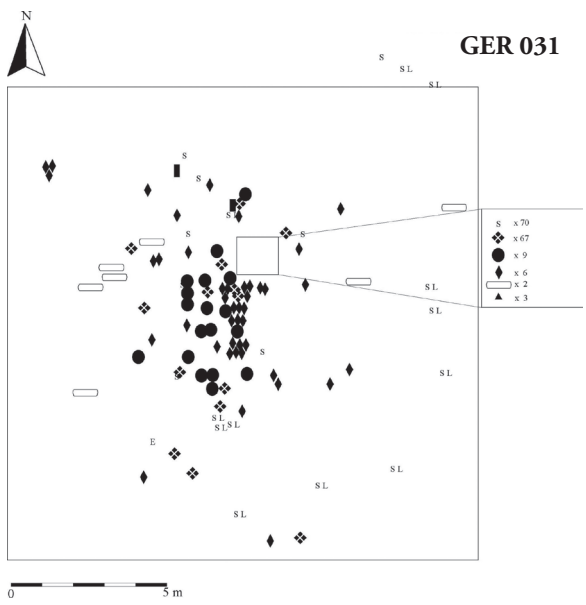


Figure 11.36. GER 031, detailed plot of lithics scatter. Key as for Fig. 11.39 (FP 1999).

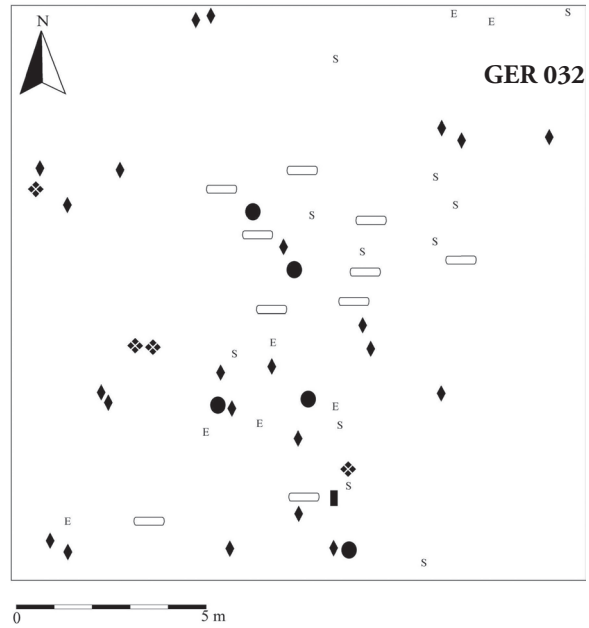


Figure 11.37. GER 032, detailed plot of lithics scatter. Key as for Fig. 11.39 (FP 1999).

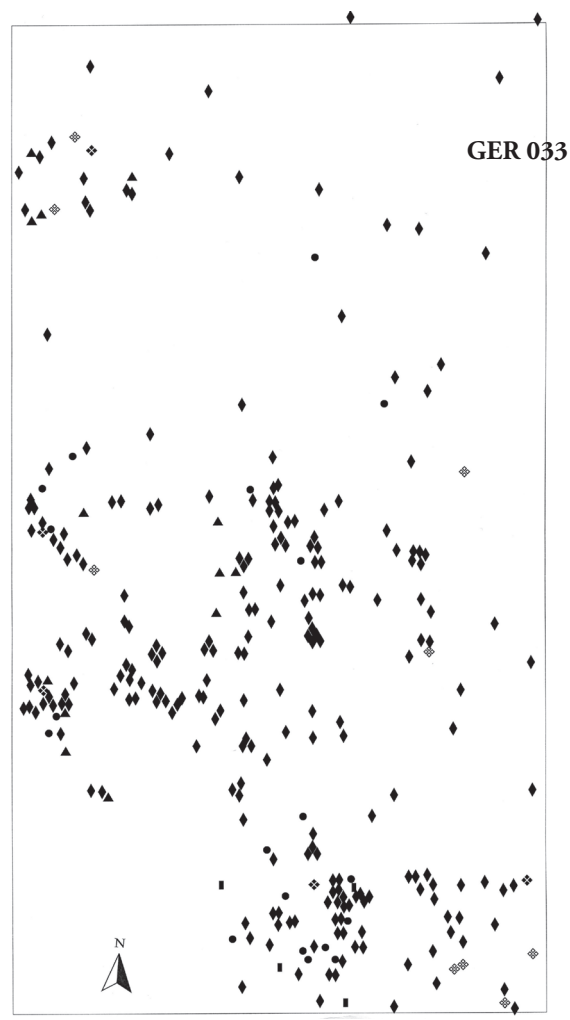
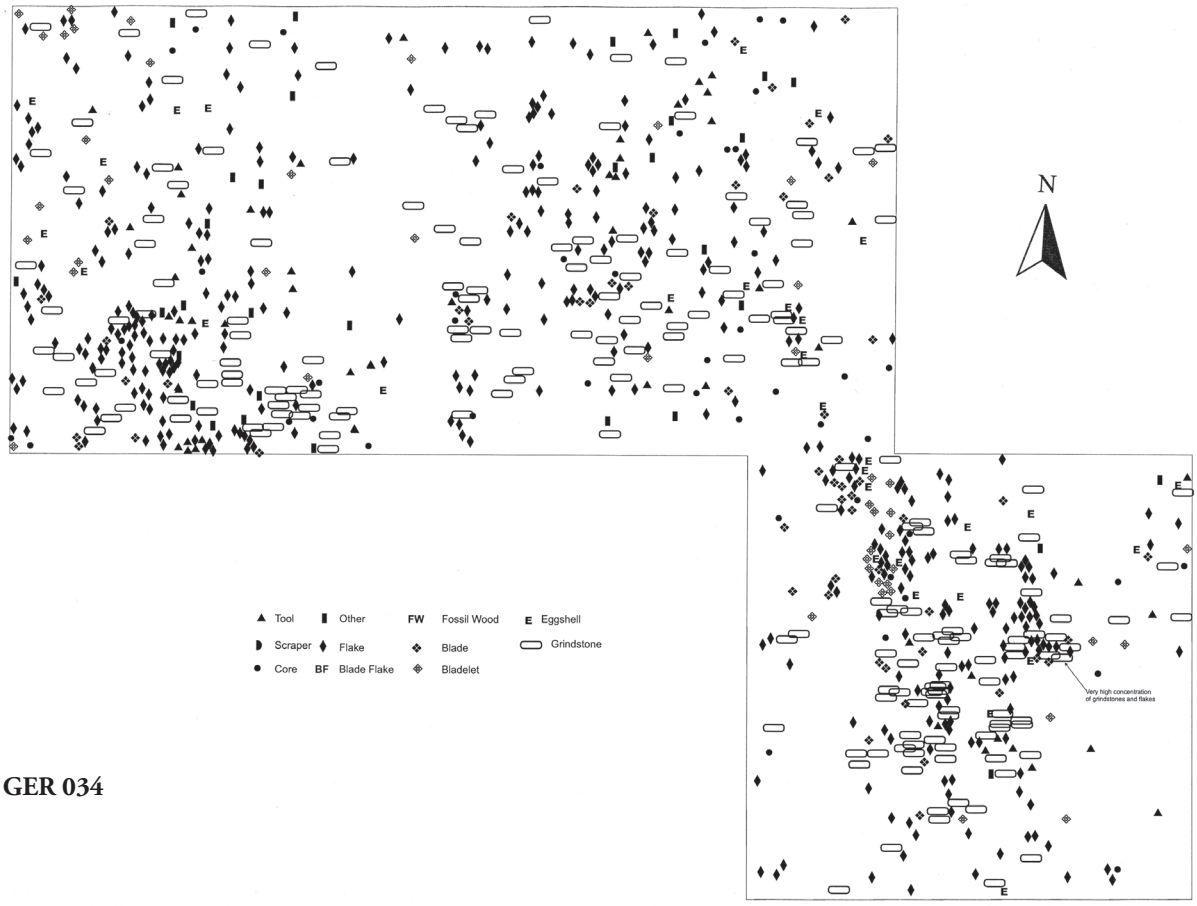


Figure 11.38. GER 033, detailed plot of lithics scatter. Key as for Fig. 11.39 (FP 1999). Area is 35 x 15m.



GER 034

Figure 11.39. GER 034, detailed plot of lithics scatter (FP 1999). Area is 15 x 15m plus 15 x 30m.

pieces, perhaps related to GER 018, which lies close by to NE [1998]. **CGAR [PAL, PAST]**
***Ills: AF 2*, Fig 11.2.**

GER 027 Settlement 26°32.63/13°04.73
A dense and extensive spread of pottery and mudbrick, with some clear walls, on a low mound *c.*200m NW of Sāniat bin Huwaydī (GER 011). This is the site recorded by CMD as Sāniat Sulaymān Krayda, and his trial trench is still discernible at the SE side of the mound. Further detail of the site will be published in *AF* 3. The surface artefact spread covers an area *c.*150 x 100m, suggesting a medium size settlement – presumably the site served by the GER 011 cemetery [1977, 1999]. **CGAR, ISLAM, EMOD**
***Ills: AF 2*, Figs 11.2, 11.35, 44.14, 44.18.**

GER 028 Settlement? 26°32.23/13°04.34
Sherd scatters of Garamantian pottery in open sandy ground on N side of track, close to well. Pottery includes RS, no collections. See also GER 010 [2000]. **CGAR**
***Ills: AF 2*, Figs 11.2, 11.15.**

GER 030 Lithics scatters, occupation 26°35.99/13°04.76
General number assigned to a group of small scatters around a palaeolake. Random pick-up included Mousterian point, denticulate, bifacial foliate, flakes and a large blade fragment, also Holocene pieces – backed blades and a polished stone axe fragment. [1999]. **PAL, PAST, E-MPAST, LPAST**
***Ills: AF 2*, Figs 42.4-42.6.**

GER 031 Lithics scatter, occupation 26°36.02/13°04.86
A dense lithic scatter (collection of 15 x 15m area), with ostrich eggshell and grinding stone fragments. Systematic grid collection. A clear concentration of knapping debris; the reduction of four cores within a 5m x 5m area. Probably a single stop by a small group of 6/5th millennium BP pastoralists. [1999]. **MPAST**
***Ills: AF 1*, 127; *AF 2*, Fig. 11.36.**

GER 032 Lithics scatter, occupation 26°36.08/13°04.79
Fairly sparse scatter of material (Holocene lithics, pottery and ostrich eggshell) on a W-facing slope by dried up lake (collection of 15 x 15m area), with ostrich eggshell and grinding stone fragments. Systematic grid collection. Residual Mousterian sidescraper and denticulate with mid-Holocene campsite comprising a single endscraper and débitage dominated by flakes but with an important bladelet component. [1999]. **MPAST, [PAL]**
***Ills: AF 1*, 127; *AF 2*, Fig. 11.37.**

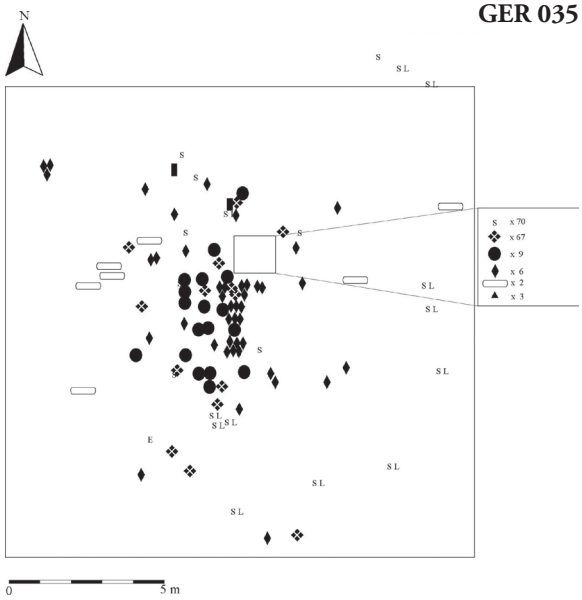


Figure 11.40. GER 035, detailed plot of lithics scatter. Key as for Fig. 11.39 (FP 1999). Area is 15 x 15m.

GER 033 Lithics scatter, occupation 26°36.03/13°04.51

A small scatter of lithics, ostrich eggshell and early pottery (collection of 35 x 15m area), with ostrich eggshell and grinding stone fragments. Systematic grid collection. A reduction of cores for flakes, possibly in 2 separate concentrations (or visits?). Retooling took place, segments and microliths are present, also a single projectile point. Perforators also used. A residual Mousterian piece was also found. [1999]. **E-MPAST [PAL, EMOD]**
***Ills: AF 1*, 113, 127, 129; *AF 2*, Figs 11.38, 42.4.**

GER 034 Lithics scatter, occupation 26°35.82/13°04.41

Quite extensive (*c.*100 x 50m) sparse to moderate scatter of Neolithic material (lithics, ostrich eggshell, grindstone fragments, but no pottery). Collection of 15 x 15m plus 15 x 30m area. Systematic grid collection. A minimum of two concentrations with a single Mousterian artefact. Six projectile points are present suggesting this is a retooling station for a hunting party. A flake from a polished axe is present as is a burin spall but not the burin which may have been taken off site. [1999]. **PREPAST? E-MPAST [PAL]**
***Ills: AF 1*, 127, 130; *AF 2*, Figs 11.39, 42.4, 42.6.**

GER 035 Lithics scatter, occupation 26°35.77/13°04.43

A further discrete scatter *c.*200m S of GER 034, comprising Holocene lithics, ostrich eggshell, grindstone fragments, but no pottery (collection of 15 x 15m area). Systematic grid collection. A highly concentrated scatter with intensive reduction for flake and blade blanks. A wide variety of raw material is present. A short-term camp site of mid-Holocene date. [1999]. **E-MPAST [PAL]**
***Ills: AF 1*, 127; *AF 2*, Figs 11.40, 42.4.**

GER 036 Lithics scatter, occupation 26°36.00/13°04.80

A grab sample of material, four cores for the production of flakes and bladelets. Some flakes and blades present. Mid-Holocene date. [1999]. **MPAST**
***Ills: AF 1*, 127.**

GER 037 Lithics scatter, occupation 26°35.60/13°04.50

A very extensive and dense Pleistocene lithics site – at least 300m E-W and 200m N-S along a low crescent-shaped gravel mound at the edge of the flattish plain below the sandy slope up to the dunes of the sand sea. An Acheulean/ Mousterian scatter with a single biface, sidescraper, two Levallois flakes, a Tayac point and a retouched blade. Four disc cores and two Levallois examples were collected. This is a reduction site, probably of medium duration, for a small group of hominids. [1999]. **PAL [PUGAR]**
***Ills: AF 1*, 127.**

GER 038 Lithics scatter, occupation 26°35.98/13°04.12

A small concentration of Holocene lithics, ostrich eggshell fragments, with a few pottery and grinder fragments, located near a palaeolake on the S edge of the sand sea. Numerous fossil roots were noted in the sand adjacent to the site. Eighteen lithics were collected, tools were lacking and blank forms were dominated by flakes. Pastoral camp site similar to sites GER 031-036. A mixture of flakes and blades which are undiagnostic for either culture/ chronology. Some pieces are extremely worn. [1999]. **MPAST**

GER 040 Well 26°32.78/13°04.28

Abandoned well (W100) to E of Sāniat Jibrīl. Visible only as a much collapsed crater about 10m across and *c.*4m deep. No wooden superstructure remaining. [2000]. ***ISLAM-EMOD?***

Figure 11.41. GER 043. A-frame and pulley system of dalu *well (photo: FP 1998).*

GER 041 Well 26°32.27/13°03.85
Abandoned old well (W104); large crater with dead palm trees and other trees growing; evidently abandoned long enough ago for these trees to establish themselves. No traces of channels, pulleys, tanks, etc. [2000]. ***ISLAM-EMOD?***

GER 042 Well 26°32.36/13°03.54
Abandoned old well (W105) at edge of dead palm grove, visible as a crater with trees in; no other features. [2000]. ***ISLAM-EMOD?***

GER 043 Well 26°32.85/13°04.23
Well (W107) near Sāniat Jibrīl, said to be 25-30 years old. Palm trunk pulley supports and a channel of hollowed out palm trunk were still *in situ*. The pulley and hoist were abandoned; a motorised pump and rubber tubing have replaced them. The pump is now broken and the well is out of action; but the water is said not to be exhausted. (D:5m; Depth: said to be 25m to sweet water. Allegedly, 10 years ago there was water at some 3m depth, i.e. directly above the clay band). Stratigraphy: Uppermost 3m: reddish orange sand; below this is yellow/green/grey clay. The palm superstructure and animal hoist probably relates to the period up to 10 years ago when water was available at 3-4m; the deepening to 25m may relate to the introduction of the motorised pump. [2000]. ***ISLAM-EMOD?***
***Ills: AF 1*, 269; *AF 2*, Fig. 11.41.**

GER 044 Well 26°32.69/13°04.74
Abandoned modern well (W108) sunk through the collapsed crater of an old well, D: *c.*15m and 4m deep. The modern well is machine-cut, square, and with a metal pulley superstructure. Metal piping lies around the well but none is in place. ***ISLAM-EMOD?***

GER 045 Well 26°32.53/13°04.97
Abandoned *dalu*-type well (W109) near Sāniat bin Huwaydī. The wooden pulley superstructure has collapsed into the well. Originally the pulley support was an A-frame of palm trunks, lashed together with ropes; the cross-bar would have supported a hollowed-out palm trunk acting as a channel to receive the water from a self-dumping leather bag (cerd, locally called: *dalu*). [1999, 2000]. ***ISLAM-EMOD?***

GER 046 Well 26°32.60/13°04.74
Small dry well (W110) outside a modern house. Low mudbrick wall around mouth (D:1.2m; Depth:4m). ***ISLAM-EMOD?***

GER 047 Well 26°32.40/13°04.56
Collapsed well (W111), which has exposed a foggara channel oriented at 15°±5°. The channel visible in the S (upstream) face of the crater is 80cm wide at the visible base, but it sand-filled to within 40cm of the roof, which forms a rough arch, 40cm wide at the top. It is cut into the clay stratum just below the surface. The N (downstream) exposure is better preserved: 40cm wide and 60cm high above the infill, almost rectangular in cross-section with a slightly rounded roof. The top of the foggara channel is *c.*1.3m below the modern surface at this point. The well crater is 7.1m in diameter and *c.*3m deep. ***ISLAM-EMOD?***

GER 048 Well 26°32.54/13°05.29
Abandoned sub-circular well, with much decayed wooden platform and stump of palm trunk (as pulley support) on SE side. Animal walkway (*c.*10m long) on SE side and a more recent cut on NW. Total depth to fill: 6m. Scatter of coarse pottery extends over distance of 200m to E of well. Palm trunk and earthen irrigation channels visible in area to W. ***ISLAM-EMOD?***

GER 049 Well 26°32.90/13°05.39
Square well dug through yellow-green clay *c.*1-2m below the surface, with sandstone visible below the clay. Depth to fill: 4.5m. Rope wear marks on the SE side, remains of wooden structure (one side of A-frame) still *in situ* on NW side. Sub-oval mudbrick tank to E (4 x 8m). No animal walk. ***ISLAM-EMOD?***

SECTION 12. JARMA ESCARPMENT [GERMA ESCARPMENT] (GSC)

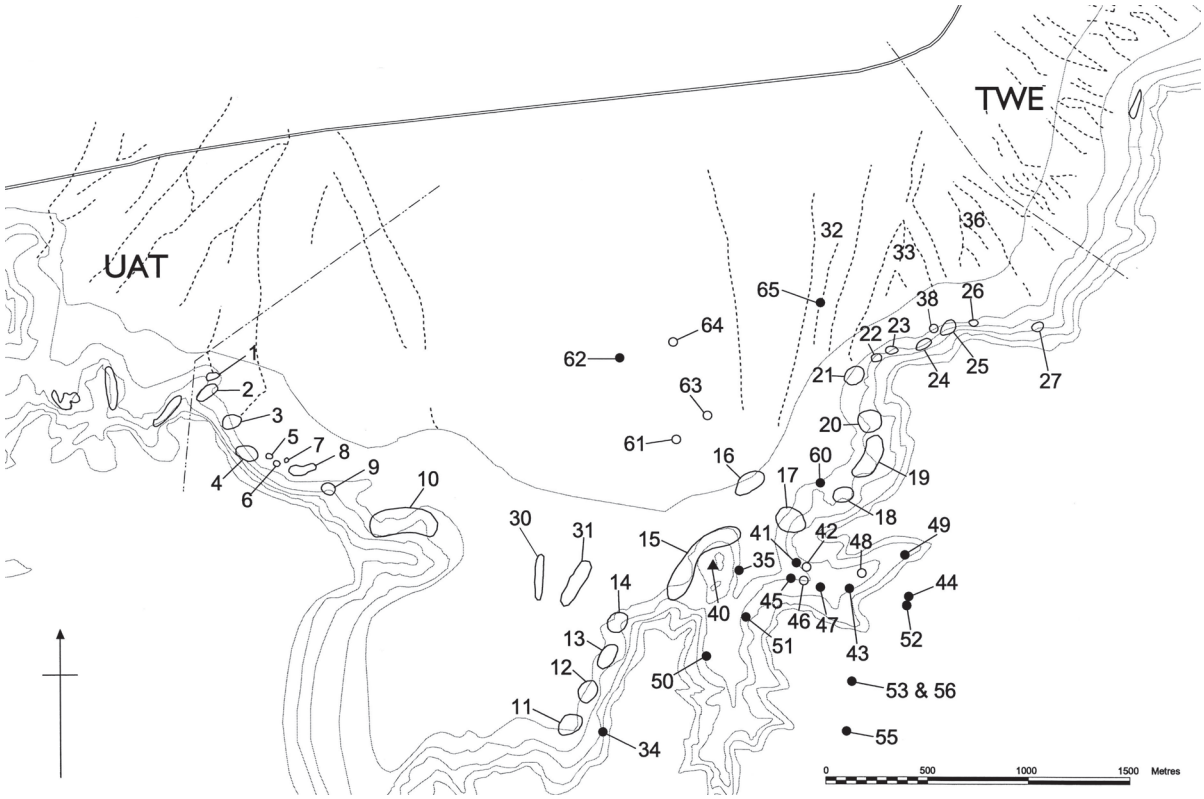


Figure 12.1. Map of sites in Jarma Escarpment sector (CMD/FP).

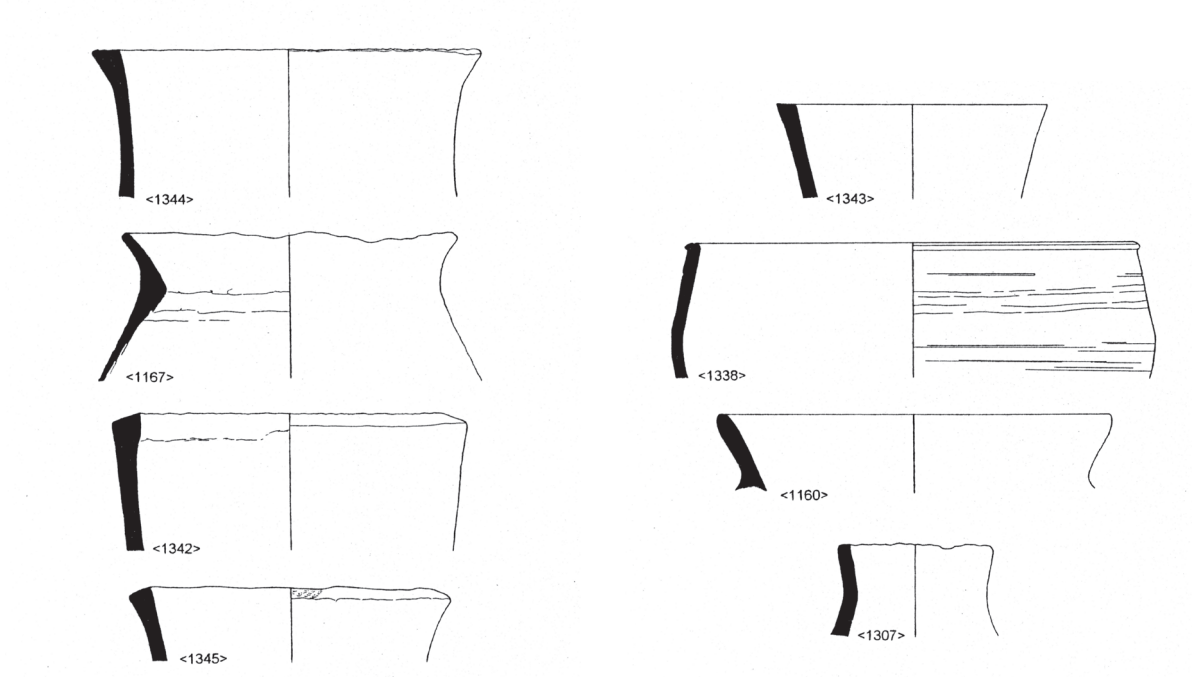


Figure 12.2. GSC 002, selection of handmade pottery forms from cemetery (CMD/FP).

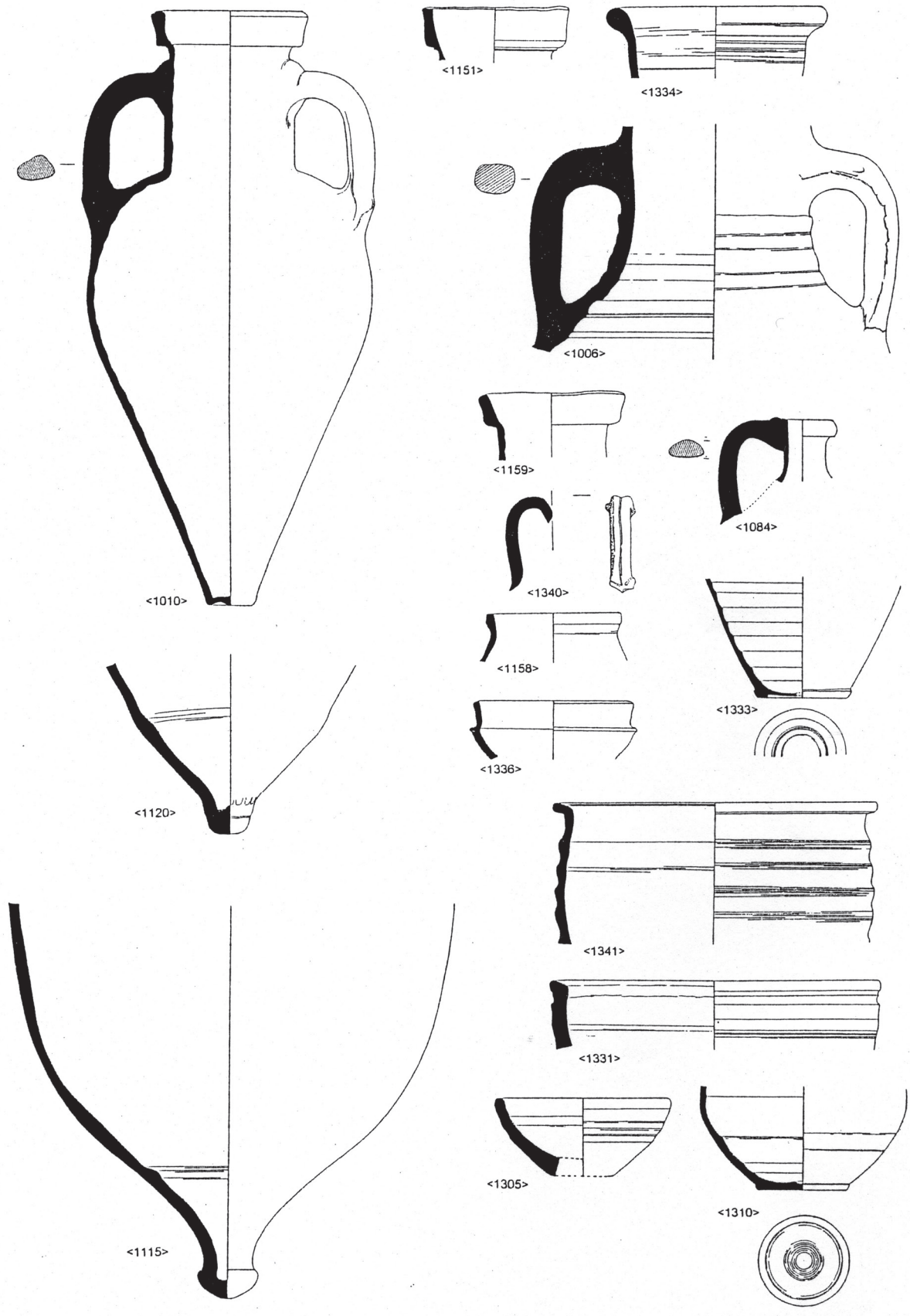


Figure 12.3. GSC 002, selection of wheelmade pottery forms from cemetery (CMD/FP).

This survey bloc covered most of the escarpment edge S of Jarma as well as the area of the 'Royal Cemeteries', previously tested by Caputo in 1934 (Pace *et al.* 1951, 292-320), and Ayoub in 1962-6 (Ayoub [no date], 1-11; 1967a 11-22; 1967b 213-19). CMD also excavated there in 1963. The Italians excavated a number of burials from the escarpment cemeteries in the area of GSC 001-008 (Pace *et al.* 1951, 352-57). Ground survey by CMD was carried out along the escarpment mainly in 1967, with some additional work along the E end in 1977.

Most of the area was revisited during the 2000 season, following some limited work in 1997-99. By that date, several sites had been seriously damaged, notably during the construction of the new tarmac highway south of Jarma, over the hamada. During the building of the ramp climbing over the escarpment, quarrying for aggregates encroached on the south side of the 'Royal cemeteries' (GSC 030-31), while other smaller sites along the escarpment were entirely destroyed.

Despite the proximity of Old Jarma and other Garamantian sites in its vicinity, this stretch of the escarpment, with its deep embayment, has relatively few foggara although substantial groups are found to the W and especially the E, originating above Tuwash.
***Ills: AF 2*, Fig. 12.1.**

GSC 001 Cemetery 26°30.68/13°02.88
Type 3 nucleated cemetery of *c.*100 burials at end of small spur, with shaft graves and some built drum tombs (some possibly stepped) in two groups divided by gully. Pottery includes amphorae, flagons and ARS, 1st-2nd century AD. [1967, 2001]. **CGAR, LGAR**

GSC 002 Cemetery 26°30.50/13°02.76
Large cemetery of *c.*200 tombs along S slopes of spur. This appears to include large groups of nucleated shaft burials along the escarpment base as well as dispersed cairns higher up the slopes. Abundant surface pottery includes imported amphorae, flagons, bowls, Italian sigillata and ARS, 1st-3rd century AD. [1967, 2001]. **PUGAR, CGAR**
***Ills: AF 2*, Figs 12.2-12.3.**

GSC 003 Cemetery 26°30.50/13°02.88
Nucleated cemetery of robbed cairns with several clusters of graves divided by small gullies along lower escarpment slopes. Sherds include amphorae, wheelmade and handmade jars and some ARS, 1st-4th century AD. [1967]. **CGAR, LGAR**

GSC 004 Cemetery 26°30.43/13°03.01
Extensive spread of dispersed cairns along escarpment edge. Its S end has some large type 3a drum cairns, as well as small clusters of adjoining mound cairns. Foggara channels which cut through the cemetery area appear to postdate the cairns, though one type 4a square cairn seems also to overlie foggara spoil. Very little surface pottery and some unrobbed graves. One stone bowl. Sherds include amphorae, bowls, jars and RS, 1st-2nd century AD. [1967]. **CGAR**
***Ills: AF 2*, Fig. 12.4.**

GSC 005 Cemetery 26°30.41/13°03.43
Small nucleated cairn cemetery of *c.*60 graves on lower escarpment slopes, on N side of large gully. Heavily robbed. Further scattered cairns in vicinity. One stone bowl/hollowed slab. Large foggara separates it from

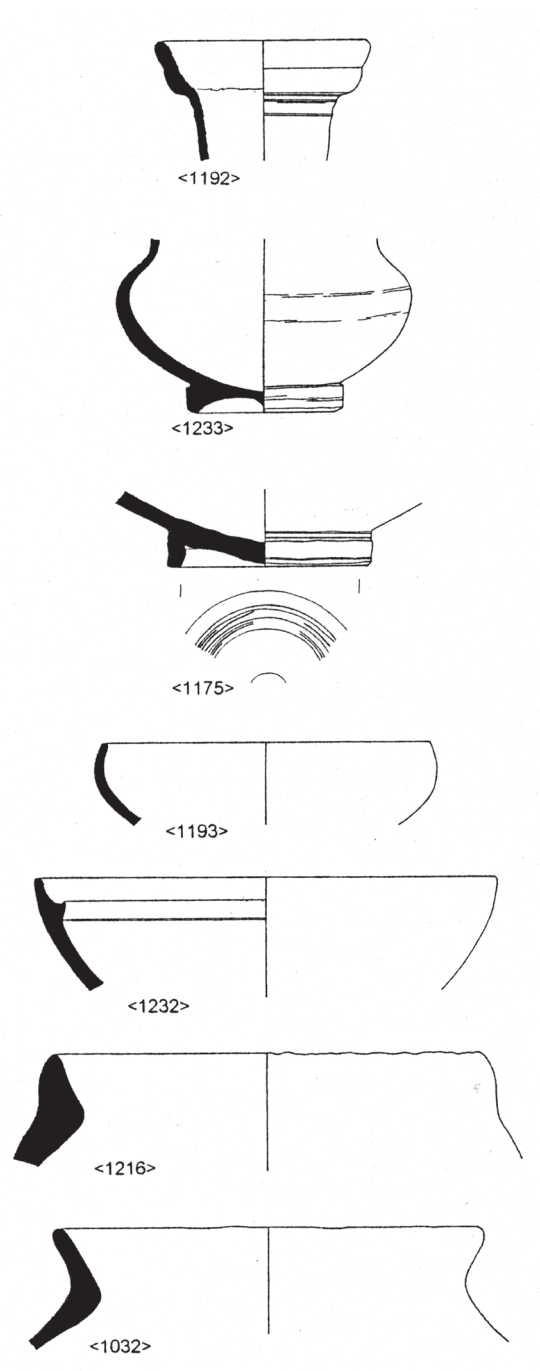


Figure 12.4. GSC 004, selection of pottery forms from cemetery (CMD/FP).

GSC 004. Little surface pottery but amphorae and jars noted, and ARS, 1st-2nd century AD. [1967, 2000]. **CGAR, LGAR**
***Ills: AF 2*, Fig. 12.5.**

GSC 006 Cemetery 26°30.30/13°03.11
Type 2 (?) dispersed cemetery including some well-preserved type 3a drum cairns and well as more amorphous type 1 mound cairns, some type 1c with kerbs.

6.1: an unusual low mound cairn with stepped rings of stones around it (type 1c), three rough orthostats on its E side and small stone cist on W side. **6.2**: small drum tomb with tall sides and a conical top (type 5e). **6.3**: row of large drum cairns and drum tombs (types 3a/3b) with vertical sides and flat tops, *c.*1.5m high and *c.*8m diameter, filled with small stones. Some examples may have stepped central section (type 5a). **6.4**: large mound cairn with rough stone kerb. **6.5**: large mound cairn/collapsed drum cairn with two large slab stele on W side.

Very little pottery but some jars and bowls and ARS noted, 1st-4th century AD. [1967, 2000]. **CGAR**
***Ills: AF 2*, Fig. 12.6-12.11.**

GSC 007 Cemetery 26°30.30/13°03.12
Compact group of 25-30 cairn graves. Little pottery, some handmade jars and rare ARS, 1st-2nd century AD. [1967]. **CGAR**

GSC 008 Cemetery 26°30.24/13°03.26
Type 2 dispersed cemetery of 50+ tombs, heavily robbed by late 1970s for building stone. Tombs form two main groups of drum cairns and drum tombs (types 3a/3b),

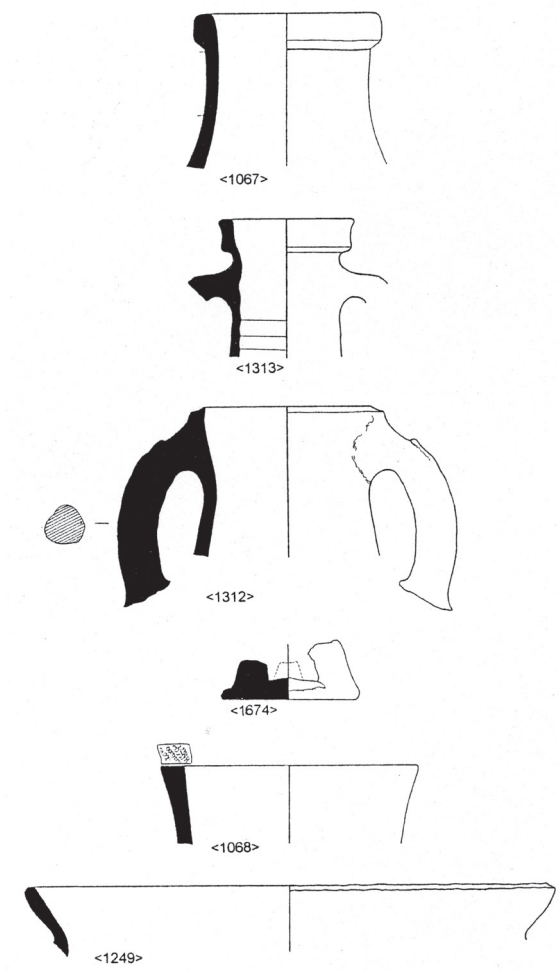


Figure 12.5. GSC 005, selection of pottery forms from cemetery (CMD/FP).

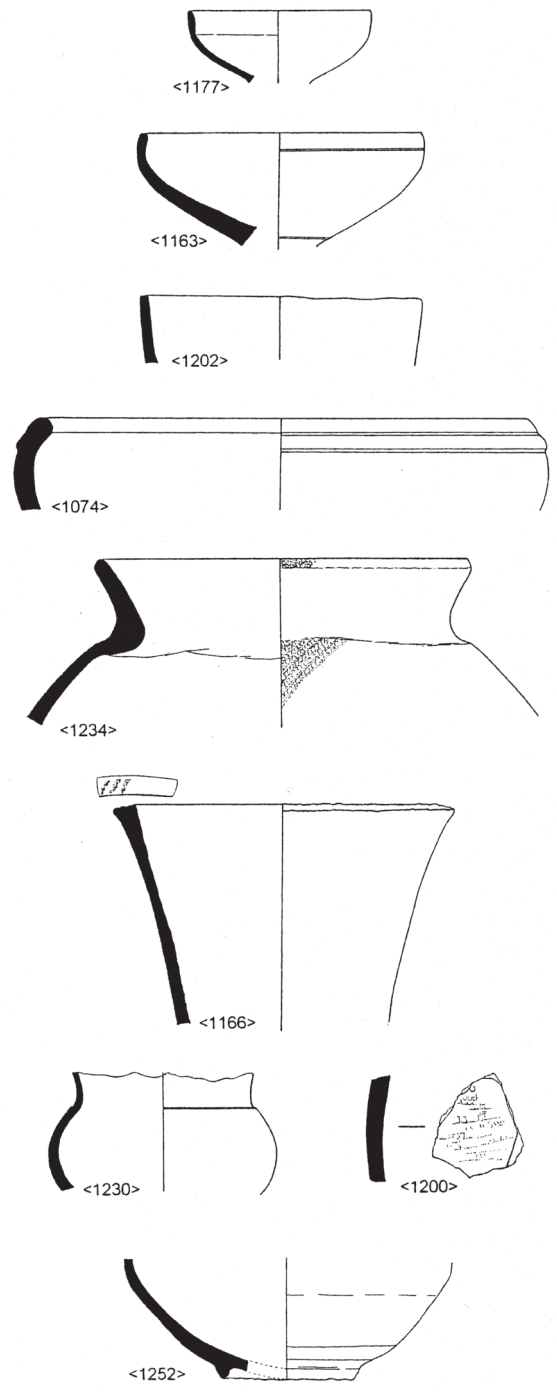


Figure 12.6. GSC 006, selection of pottery forms from cemetery (CMD/FP).

Figure 12.7. GSC 006, general view of drum cairns and drum tombs (photo: CMD 1967).

Figure 12.8. GSC 006.1, mound cairn with stone rings (photo: CMD 1967).

Figure 12.9. GSC 006.2, type 5e tall drum tomb with conical cairn superposed on central section (photo: CMD 1967).

one including a cluster of three contiguous cairns, the second group having several examples of proto-stele and stone bowls on their E sides; also one crude square offering table, lacking hollows. Similarities to UAT 013. Surface pottery mainly amphorae and bowls mainly of 'late Punic/Hellenistic' types. [1967, 1977, 2000]. **PUGAR, CGAR**
***Ills: AF 2*, Figs 12.12-12.14.**

Figure 12.10. GSC006.3, type 3a, drum tomb, with flat top and infill of small stones (photo: CMD 1967).

Figure 12.11. GSC 006.5, with slab stele on W side (photo: CMD 1967).

GSC 009 Cemetery 26°30.10/13°03.18
Dispersed group of drum cairns between GSC 008 and GSC 010, including at least one unusually tall and hollow structure. Little pottery. Several crude 'proto-tables' and stone bowls. Single grave with stone 'hand' stele.
9.1: unusual structure, presumed to be a tomb. Some use of mud mortar apparent in outer wall. **9.2**: robbed cairn with stone bowl. **9.3**: robbed/collapsed cairn with fallen slab stele and possible proto-table. **9.4**: cairn with stone bowl. **9.5**: robbed cairn with four slab stele on W side. [1967]. **P*UGAR, CGAR?***
***Ills: AF 2*, Figs 12.15-12.16.**

GSC 010 Cemetery 26°30.00/13°03.54
Scatter of low mound cairns, some with an outer kerb ring of orthostats (type 1c). [1967]. ***PUGAR,* [EMOD]**

GSC 011 Cemetery 26°30.00/13°04.26
Cemetery of *c.*20 drum cairns and drum tombs. Most graves robbed. Outer walls of coursed stones, with central chamber and shaft from S, blocked with slabs. Other graves with slab stele to E. Site destroyed by road construction during 1990s. Very little surface pottery. [1967]. **CGAR**
***Ills: AF 2*, Fig. 12.17.**

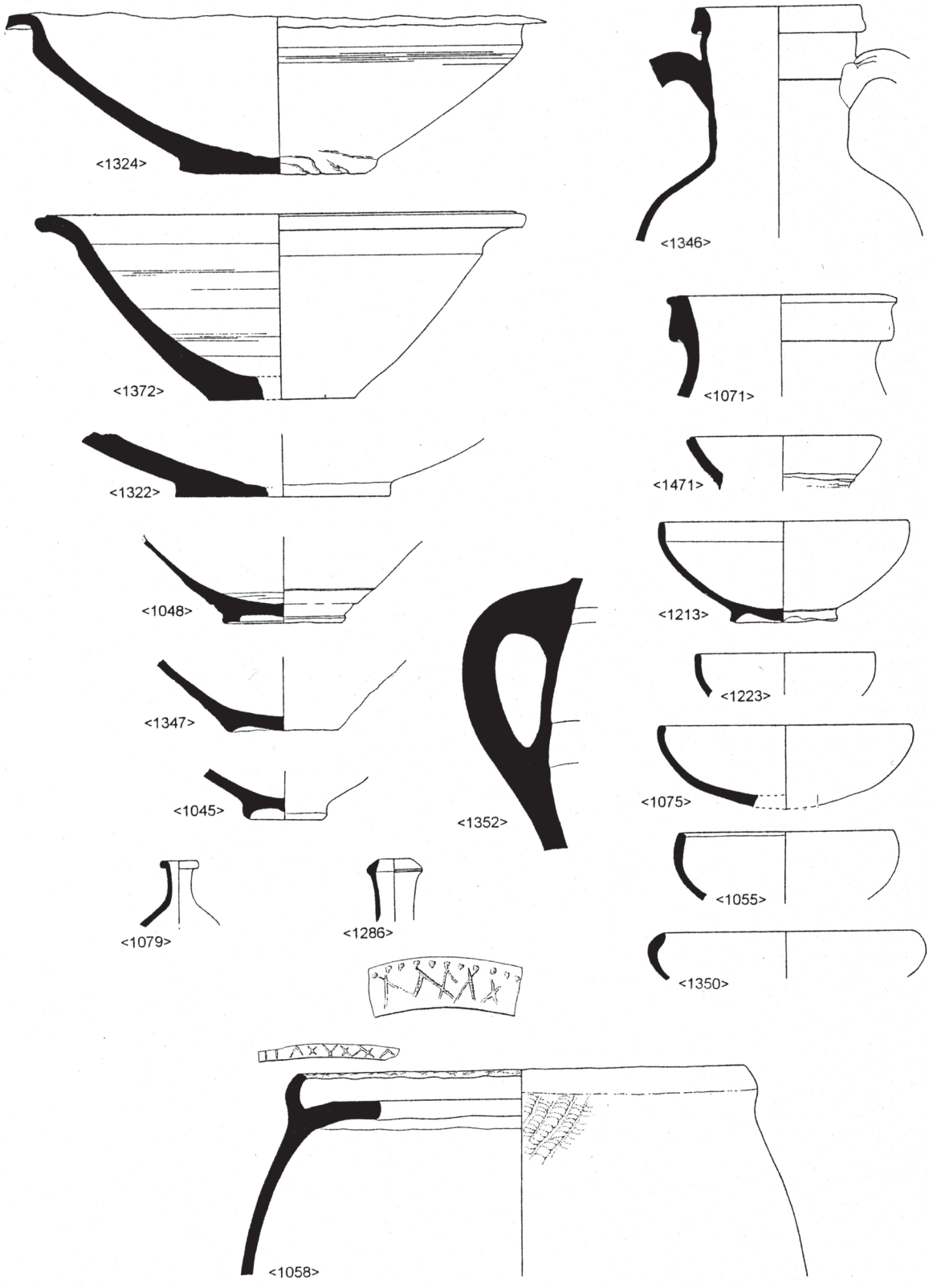


Figure 12.12. GSC 008, selection of pottery forms from cemetery (CMD/FP).

Figure 12.13. GSC 008, large drum tomb, with type 2 slab stele on E side (photo: CMD 1967).

Figure 12.14. GSC 008, tomb with type 2 slab stele and type 2 stone bowl (photo: CMD 1967).

Figure 12.15. GSC 009, cairn or tomb with unusual tall circular structure (photo: CMD 1967).

Figure 12.16. GSC 009, general view of cemetery (photo: CMD 1967).

Figure 12.17. GSC 011, general view of type 3 drum tombs (photo: CMD 1967).

Figure 12.18. GSC 012.1, looking W (photo: CMD 1967).

GSC 012 Cemetery 26°30.10/13°04.38
Small dispersed cairn cemetery, several with slab stele and stone bowls on E side. **12.1**: cairn with slab stele. **12.2**: cairn with slab stele and stone bowl. [1967]. **CGAR**
***Ills: AF 2*, Figs 12.18-12.19.**

GSC 013 Cemetery 26°30.20/13°04.44
Small dispersed cemetery of 14-15 tombs. Stone bowl and stele fragment on surface. Some 'late Punic' pottery in area as well as some Roman imports including RS, 3rd-4th century AD. [1967]. **PUGAR, CGAR**

Figure 12.19. GSC 012, simple cairn with type 1 stele (photo: CMD 1967).

GSC 014 Cemetery 26°30.20/13°04.5
Dispersed cairn cemetery, with at least 2 rough stele. [1967]. ***PUGAR?***

GSC 015 Cemetery 26°30.40/13°04.62
Scatter of *c.*10-15 large cairns around the base of the escarpment. Few sherds include flagons and Berber Red fabric vessels and amphorae of 'late Punic' types. Lithic scatters also noted in vicinity. [1967]. **PUGAR, CGAR**

GSC 016 Cemetery? 26°30.50/13°04.92
Probable cemetery area, completely robbed out for stone for road building. Surface sherds include amphorae, flagons/jugs, of 'late Punic' types, also half stone quoit and worked stone. [1967, by 2000 no trace of site, destroyed by aggregate quarrying]. **PUGAR**
***Ills: AF 2*, Fig. 12.20.**

GSC 017 Cemetery 26°30.50/13°04.98
Heavily damaged cemetery area with dispersed cist-cairns. Little pottery recovered. [1967]. **PUGAR**

GSC 018 Cemetery 26°30.50/13°05.22
Small group of *c.*10 cairns on escarpment slopes. Heavily robbed. No surface pottery. [1967, 2000].

GSC 019 Cemetery 26°30.70/13°05.28
Small group of type 1 mound cairns and a few possible type 3a drum cairns. [1967]. ***PUGAR?***

GSC 020 Cemetery 26°30.80/13°05.34
Small cemetery area between two gullies. Stone bowl and some amphora fragments. [1967]. **CGAR**

GSC 021 Cemetery 26°31.00/13°05.28
Nucleated cemetery of *c.*50 cist graves, with possible second group of similar size just to N. No surface pot recovered. [1967]. ***CGAR?***

GSC 022 Cemetery, inscription 26°31.10/13°05.34
Dispersed cemetery dissected by several gullies. Some graves robbed. Upright slab near N end with vertical Tifinagh inscription, near line of foggara channel. [1967]. ***LPAST? GAR? GAR-EMOD***

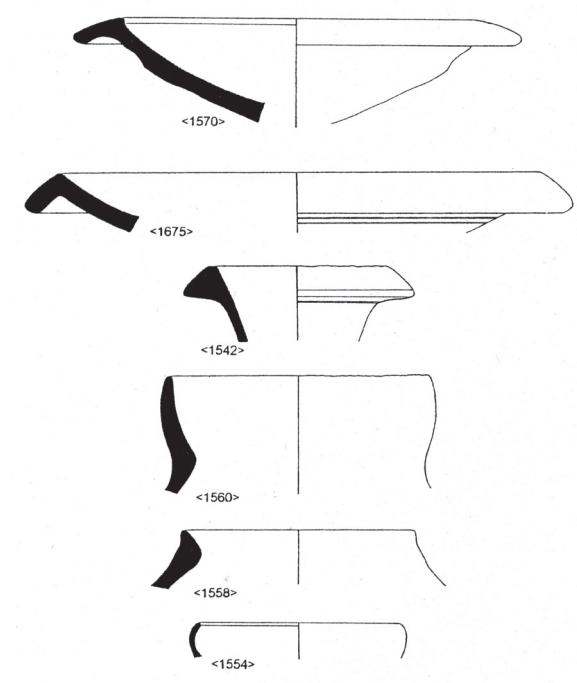


Figure 12.20. GSC 016, selection of pottery forms from cemetery (CMD/FP).

GSC 023 Cemetery, inscription 26°31.15/13°05.48
Type 3 large nucleated cemetery with mix of type 2 shaft graves and some larger structures. On E side large circular drum cairns (type 3a) up to 6m diameter with some possibly stepped examples (type 5a). Area damaged by machine scraping. A roughly inscribed stone by one tomb on lower slopes. Moderate scatters of surface pottery, including ARS, 1st-3rd century AD. [1967, 2000]. **CGAR, *GAR-EMOD***

GSC 024 Cemetery 26°31.22/13°05.51
Small nucleated group of *c.*30 type 2 shaft graves, with no upstanding superstructures. Little surface pottery. A

Figure 12.21. General view over cemeteries GSC 025 and 038 from the escarpment looking N (photo: FP 2000).

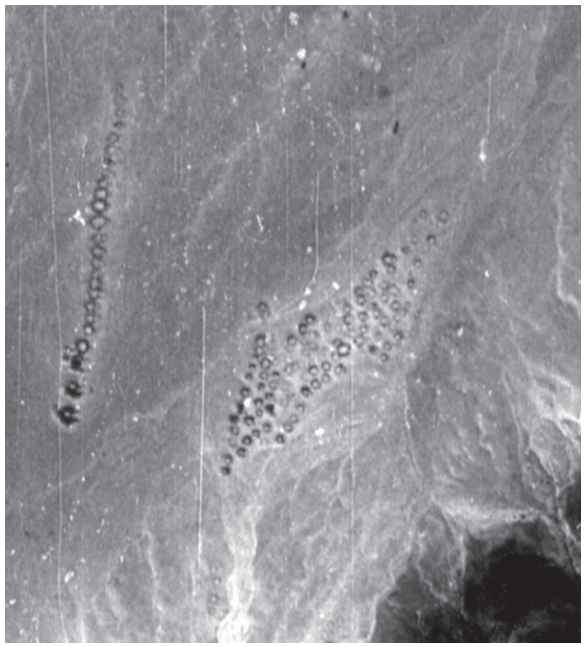


Figure 12.22. Air photograph of the 'Royal Cemeteries' GSC 030 and 031.

group of five possibly quite modern tombs lie on its N side. [1967, 2000]. ***CGAR? EMOD?***

GSC 025 Cemetery 26°31.24/13°05.64
Large cemetery of nucleated shaft graves, forming at least four discrete groups of tombs. Probably 200+ in tight groups. At least two graves appear to have been 'excavated' with deep trenches (*c.*2m deep) cut through the base of the graves. Little pottery but imported Roman pottery present. [1967, 2000]. **CGAR**
***Ills: AF 2*, Fig. 12.21.**

GSC 026 Cemetery 26°31.20/13°05.76
No details. On AP appears as scatter of cairns with some possible small nucleated clusters. [1967]. ***LPAST? GAR?***

GSC 027 Cemetery 26°31.30/13°06.00
Small funerary area. On AP appears as thin scatter of cairns along escarpment base. [1967]. ***LPAST? GAR?***

GSC 030 Cemetery 26°30.18/13°4.23
The so-called Royal Cemetery (King's side). Type 6 linear cemetery running approximately N-S from near the escarpment edge, south of Jarma, often described as 'Royal Cemetery' (see also GSC 031 to E for 'Queen's side'). Previously explored with three tombs excavated by Caputo (his *Necropoli monumentale*) in 1934 (Tombs 1-3) (Pace *et al.* 1951, 292-320), a further four by Ayoub in 1963 (tombs 4, 14, 20, 25) and then one by CMD in 1963 (tomb 5). Ziegert also provides a brief description of 27 tombs (1969, 55). The Royal associations of the cemetery are unprovable, but it is worth noting that the GSC 030 tombs are the largest individual funerary monuments of Garamantian date yet recorded. They appear to be late Garamantian in date however, despite Ayoub's attempt to interpret them as representing a linear dynastic series running from the 1st century AD onwards (1967b). Pottery from Tomb 5 suggests a date in the first half of the 4th century AD. The latest material, from Tomb 14, may date as late as the early 6th century AD. Material recovered by Caputo also appears to be of broadly 4th-century date (Fontana 1995).

Excavation and surface survey suggest that most of the tombs in this cemetery had type 5b rectangular/square stepped superstructures sealing chambers with corbelled roofs (Pace 1935, 169). The site has clearly been extensively robbed, both in antiquity and more recently. In 1977 CMD noted that the location of robbing pits indicated a systematic search for offering tables and stele on the E side of the tombs, probably quite recently. A record was also made of surface sherds. It was noted that the general spread of surface sherds extended up to 20m to E of tombs but with much less found on W side.

The recent construction of a new road from Jarma over the escarpment to the S has also unfortunately cut between this cemetery and the 'Queen's Tombs' (GSC 031) to E, while quarrying for aggregates has also encroached very close to the S side of GSC 031, removing several outlying tombs known to have existed in this area.

Many surviving elements such as stele and offering tables were removed from the site during the 1960s to Sabhā Museum for safe keeping during the 1960s; some are now returned to Jarma Museum (Ruprechtsberger 1997, 75). Identification and recording of such pieces would certainly be a valuable addition to our knowledge of this important site. Brief descriptions of previously excavated tombs are included here, as well as CMD's observations. It should be noted that in some cases, published descriptions are not always consistent. Identified as cemetery (ROY) by CMD.

30.1: previously excavated by Caputo (Pace *et al.* 1951, 292-300) and examined by CMD in 1977. Near square stepped stone superstructure, plastered, originally painted white. On the E side were two pairs of red painted stone 'horns'. Heavily robbed before excavations but Caputo recovered parts of several glass vessels and at least two handmade incense burners. By 1977, stele dumped in tomb chamber along with another fragment of a horn. Amphorae sherds noted in area. **30.2**: previously excavated by Caputo (Pace *et al.* 1951, 300-306). Rectangular stepped stone superstructure *c.*3.4 x 3.6m with two red painted 'horns' on E face, originally placed between two small stele. Caputo recovered parts of two amphorae, handmade incense burners, glass, beads, ivory 'comb', grindstones and fragments of basketry. **30.3**: previously excavated by Caputo (Pace *et al.* 1951, 306-19). Large rectangular stepped superstructure 7.4 x 6.8m, lower step 1.12m high, upper surviving to 50cm high. Incomplete red-painted 'horns' and large offering table 1.6m x 73cm x 39cm to E of tomb. Tomb heavily robbed and Caputo

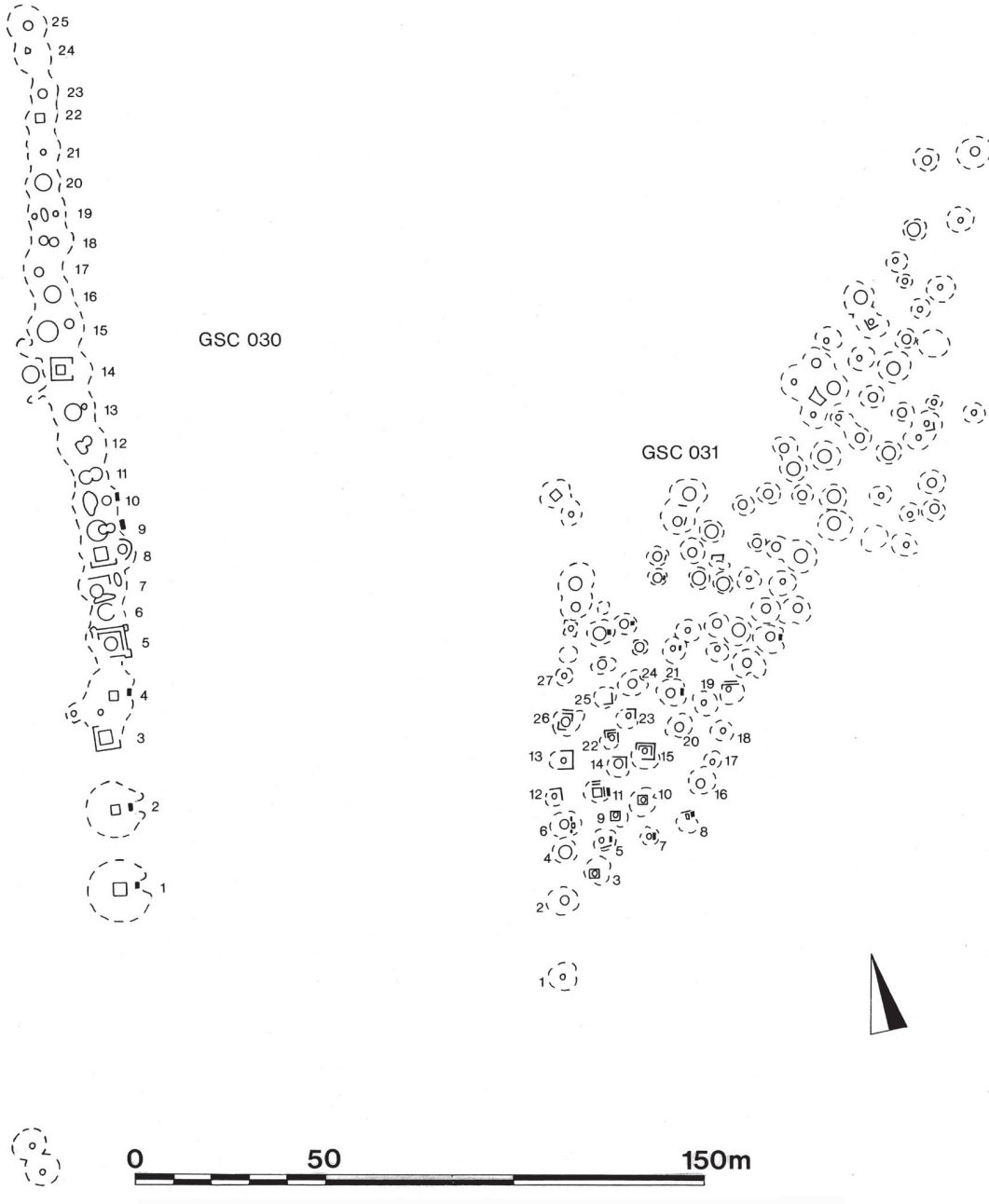


Figure 12.23. Overall survey of GSC 030 and 031 prior to the construction of the modern road embankment that now separates the two funerary areas (CMD 1965/ FP 1998).

Figure 12.24. GSC 030, the S end of the 'King's cemetery', looking NW (photo: FP 1997).

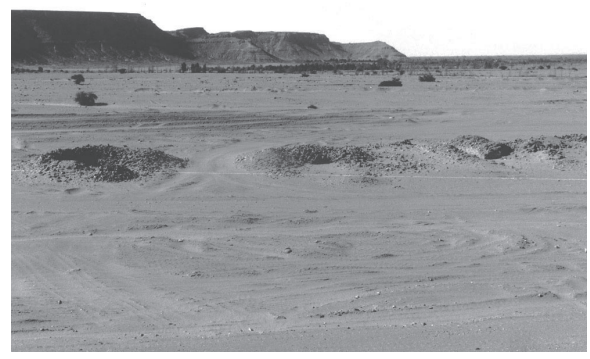


Figure 12.25. GSC 030, the S end of the cemetery, looking W (photo: FP 1997).

Figure 12.26. GSC 030.2, note the double 'horn' stele (type 6c) on the E side of the tomb (photo: CMD 1965).

Figure 12.27. GSC 030.5, N face of stepped rectangular tomb, looking W (photo: CMD 1963).

recovered fragments of amphorae, ARS bowls, much fine glass and fragments of textiles. Two further TRS bowls (Sabhā Museum H24, H26) were recovered by Ayoub (1967a, 13) when cleaning this tomb (Hayes 1972, 305; TRS form 2). A 4th-5th-century date seems likely. **30.4**: excavated by Ayoub in 1961. Near square stepped stone superstructure *c.*3.6 x 3.6m with plastered surfaces, painted white. Heavily robbed. No offering table or stele found. Elements of disturbed skeleton recovered. Finds include imported TRS bowls (Hayes 1972, 308; form 3), a bottle, amphorae fragments, much glass, textile fragments and beads. A 4th-5th-century date seems likely. **30.5**: excavated by CMD in December 1963. Tomb previously robbed and

Figure 12.28. GSC 030.5, corbelled vault of subterranean tomb chamber (photo: CMD 1963).

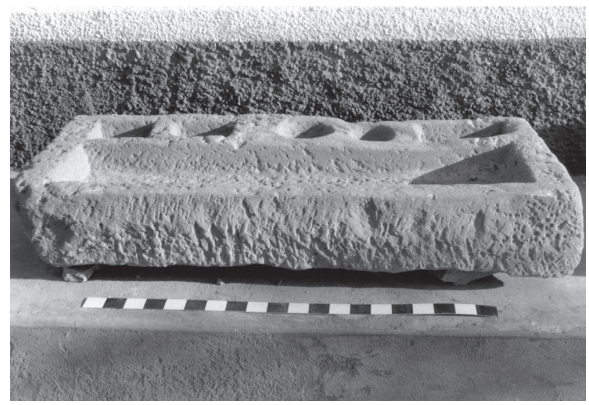


Figure 12.29. GSC 030, exceptionally large type 4a offering table (scale is 1m) (photo: FP 2000).

deeply buried in rubble and sand. Near square stepped stone superstructure *c.*7.5 x 7.5m (Ruprechtsberger 1997, 42). Lower step *c.*1.4m high, second step preserved to *c.*70cm. Two low platforms at NE and SE corners *c.*40cm high, with fragments of plaster preserved on the top of the SE step. On E side is a large platform, almost entirely robbed out, probably for 'horns'/stele. Sub-rectangular chamber *c.*3.3 x 3.6m has a 'false vault', with irregular pendentives forming a round corbelled vault with a maximum surviving height of *c.*2.2m. Against W side under fill of sand were fragments of leather and some basketry. Pottery finds in chamber included ARS dishes (Hayes 1972, 96, 101; forms 59.1, 61.1, Pl.XIIa), TRS bowls/plates, several handmade incense burners, part of an imported Tripolitanian lamp (Hayes 1972, 314, Type I) and at least two amphorae, thought to have been deposited full, one with an improvised stopper. One of the amphorae had an incised 'Libyan' graffiti. Worked stone tool also found. Further fragments of imported pottery and skeletal remains scattered around exterior of tomb and a fragment of imported fineware was found built into the NE corner step. Pottery finds suggest a date in the first half of the 4th century AD. Parts of two 'horns' and a fragment of one end of a large offering table (70 x 45 x 55) were found on the E side of the tomb. The faces of the stele were covered by heavy coats of mud plaster. **30.6**:

CMD remained uncertain whether this was a tomb or merely a robbing pit between tombs 5 and 7. A few sherds of amphorae, imported finewares and local handmade pottery around the mound. **30.7**: rectangular stepped stone superstructure with much of E side and parts of N side exposed. E face *c.*5.6m and N face >5m long. Preserved to top of first step with parts of mud plaster facing to wall surviving. Additional robbing pit on E side, over likely location of offering table. Single fragment of stele on E side. Sherds of imported finewares, amphorae, jugs/flagons and handmade wares noted. **30.8**: rectangular stone superstructure only partly exposed at SE and SW corners, suggesting sides *c.*5.5m long. Plaster facing visible at corners, and lower step probably preserved. No trace of stele or offering table. Sherds of imported finewares and amphorae noted. **30.9**: robbing pit in sand with little stone rubble in evidence, with additional pit on E side. Fragment of hand on E side. **30.10**: small robbing pit in mound with scatter of stones around rim. No visible signs of superstructure. Additional robbing pit on E side. **30.11**: small robbing pit in mound with small pile of stone on E side. No traces of superstructure visible. **30.12**: sand-filled robbing pit in mound with small mound of stones and sand on E side with additional robbing pit there. **30.13**: robbing pit with additional small pit on E side. **30.14**: excavated by Ayoub (1967a, 16-18) and examined by CMD in 1977. Large rectangular stepped stone superstructure *c.*7.3 x 7.35m with step *c.*35cm wide. A broken stele, measuring 54 x 67cm, and a large offering table, apparently deliberately smashed, were found on the E side. Tomb heavily robbed but elements of skeleton found in chamber with imported ARS (Hayes 1972, 149; form 96), handmade decorated incense-burners, glass and fragments of worked ivory. By 1977, stone robbing had stripped nearly all the superstructure, leaving little more than the plaster facing. **30.15**: robbing pit in sandy mound with no visible elements of superstructure. Additional small robbing pit and spoil mound on E side. **30.16**: robbing pit with much stone rubble around. Additional robbing pit and spoil heap on E side. A very weathered fragment of a purple sandstone offering table was found to E of tomb, measuring *c.*80 x 60cm. **30.17**: smaller mound than 30.16 with part of N face of superstructure visible but with no plaster surviving. Small robbing pit and stony mound on E side. Fragment of glass and sherds of handmade local wares on surface. **30.18**: small mound with parts of superstructure visible, sides *c.*5-5.5m long. Additional robbing pit and stony spoil heap on E side. Amphora sherd and local handmade wares. **30.19**: small mound with much of outline of superstructure visible on surface, unlike other tombs. Rectangular stony platform *c.*4.4m long on E side and 3.35m on S side with NW corner robbed away. Robbing pit in centre and also on E side. Surface sherds from an imported jug/flagon and local handmade wares. **30.20**: robbing pit in mound *c.*5.8m across with no visible superstructure. Additional robbing pit and spoil heap on E side. Surface sherds of amphorae and/or imported jugs/flagons and local handmade wares. **30.21**: robbing pit in small mound *c.*5.5m across E-W. Additional robbing pit and spoil heap on E side. **30.22**: Ayoub's Tomb 20, excavated in 1963 (1967a, 18). Heavily robbed. Circular stone superstructure *c.*6m across with sub-circular burial chamber *c.*2.75-3m across. Excavation of chamber recovered skull, 25 carnelian and glass beads and parts of two red handmade jars, one with white decoration, the other with handles. A stone hand was found 3m to the E of the tomb. In 1977, a sherd of imported fineware and sherds of other imported coarsewares were noted. **30.23**: small mound with sand-filled robbing pit. A small rectangular stone structure *c.*1.05 x 1.10m was noted *c.*5m to the E of the tomb. This was not further investigated. Surface sherds of amphorae and local handmade wares. **30.24**: previously excavated mound with stone piles to N and S and sand to W. Surface sherds of amphorae and local handmade wares. **30.25**: excavated by Ayoub (1967a, 18). Small round superstructure *c.*1.5m across with rectangular chamber 1.2m x 60cm. Skeleton was very decayed; other finds limited to two fragments of glass and a sherd of handmade pottery. In 1977 further handmade sherds and amphorae fragments noted to E of tomb. [1963, 1977, 1997]. **CGAR, LGAR**
***Ills: AF 1*, 199, 208, 221-22; *AF 2*, Figs 12.22-12.29.**

GSC 031 Cemetery 26°30.16/13°04.30
The so-called Royal Cemetery, Queen's side, situated *c.*100m E of GSC 030 and now separated from it by modern road embankment. Type 7, dense cemetery of type 5b stepped tombs, showing some linear alignments (especially those nearest and parallel to GSC 030), though any patterning is less clear towards NE. Two tombs were investigated by Caputo (his *Necropoli orientale*) and Ayoub (his 'Queens' Tombs) (Pace *et al.* 1951, 357-60; Ayoub 1967a, 18-21). Ayoub identified 96-134 tombs which he suggested were organised in 27 groups. Not all these could be identified when the cemetery was surveyed in 1999 and the heavy robbing of the cemetery overall obscures many features. In the absence of earlier cemetery plans, determining which tombs were excavated by Caputo and which by Ayoub remains difficult and CMD's observations on 13 of the tombs (April 1977) are listed separately.

Tomb 1: excavated by Caputo (Pace *et al.* 1951, 358-9). A rectangular stone stepped superstructure. Chamber with corbelled stone roofing with internal diameter of 2m and depth of 1.95m. Finds included fragments of amphora with remains of organic material, finewares, fragments of glass. **Tomb 2**: excavated by Caputo (Pace *et al.* 1951, 356-60). Rectangular stepped stone superstructure with mud plastered sides painted white. Three stele on E side, one fallen. Contained a few bones, a Tripolitanian amphora, fragments of a glass cup/dish with incised decoration (Pace *et al.* 1951, fig. 152), glass with red painted decoration and three beads. **Tomb 3**: excavated by Ayoub (1962, 18-19).

Figure 12.30. GSC 031, general view of 'Queen's cemetery' looking E (photo: FP 1997).

Figure 12.31. GSC 031, tomb 2 excavated by Caputo looking W towards GSC 030 (photo: CMD 1963).

Figure 12.32. GSC 031, Ayoub's tomb 30/32, of rectangular stepped form, with Ayoub himself providing scale (photo: CMD 1965).

Rectangular stepped stone superstructure with base 2.7 x 2.1m x 45cm high. Finds include amphora fragments, handmade incense burner and glass fragments. Stone type 6 'horn' stele on E side of tomb.

Tomb 30/32: excavated by Ayoub (1967a, 19-20). Rectangular stepped stone superstructure *c.*3m square. Mud plastered surfaces, painted white. E and N sides well-preserved. Finds from robbed chamber included skull and parts of skeleton of female, a handmade incense burner with incised and painted decoration, fragments of glass and an ostrich eggshell necklace. Large well-made rectangular offering table on E side of tomb, 132 x 68 x 46cm, with 11 small sockets and large basin. **Tomb 96/134**: excavated by Ayoub (1967a, 20). Tomb at NE end of cemetery. Small circular grave. Identified as female burial, with fragment of decorated handmade pottery and glass bead.

31.1: rectangular stone stepped superstructure with possible platform for stele on E side. Robbing pit in front of E face. **31.2**: heavily robbed and eroded. Only trace of superstructure visible along E side. No offering table but eroded fragments of stele. **31.3**: Previously excavated? Rectangular stepped superstructure, with only small parts of walls visible on surface. E side *c.*4m long at level of first step. Platform for stele on E side. **31.4**: heavily robbed rectangular tomb. Few traces of superstructure walls on surface, base *c.*4.1 x 4.25m. **31.5**: rectangular stepped tomb with parts of walls, with mud plaster, exposed from ground level; measuring *c.*4.1m across at level of first step. **31.6**: rectangular stone superstructure with some upstanding walls. Platform for stele on E side, fragment of horn stele to E. **31.7**: heavily robbed rectangular tomb. Fragment of offering table on E side. **31.8**: rectangular stone superstructure with some upstanding elements on N side, with mud plaster on wall, *c.*3.7m long. Very worn small offering table (40 x 21 x 15cm) found on S side. Very weathered type 6 stele (67 x 97cm) *in situ* on E side. **31.9**: rectangular stone superstructure with most of N side exposed, *c.*4m long at base, 3.35m at level of first step. **31.10**: robbed rectangular superstructure with much of N side exposed, probably at level of upper step, *c.*3.95m long. Robbing pit on E side. **31.11**: rectangular stepped superstructure with much of E side (*c.*5.95m long) exposed with eroded stump of horn *in situ*. **31.12**: rectangular stepped stone superstructure with parts of N and E sides partly exposed. Constructed of very small thin stones. N face *c.*3.5m long with step 60cm wide; E face *c.*4m long with platform for hands/horns in centre. **31.13**: previously excavated? Rectangular stone superstructure with much of S, E and N sides exposed, sides 4-4.5m long. First step *c.*95cm high and 38cm wide, max. height of superstructure 1.7m. Robbed subcircular chamber *c.*2m across. **CGAR, LGAR**

***Ills: AF 1*, 221-22; *AF 2*, Figs 12.22-12.23; 12.30-32.**

GSC 032 Foggara group 26°31.00/13°05.04

Group of channels traceable for over 2 km, and originally probably substantially longer. Total of over 6.5 km. Four are visible on the air photographs, but remains of perhaps eight were traceable on the ground in 1999. A subterranean foggara channel exposed in a modern well at GER 047 probably belongs to one of this group, showing that these foggaras ran underneath modern Jarma and the fields to the N, to emerge in the region of Sāniat Jibrīl. Their original length may therefore have been in the order of 3km each.

F51: Most westerly of this group; starts to N of GSC 040 and heads N as a line of gravel spoil rings. **F52**: Starts at 26°30.10/13°04.76 and heads at 332° as a series of

mounds of gravelly spoil. Traced to 26°30.07/13°04.69. **F53**: starts at 26°30.81/13°05.05 (now a modern drilled well). Initially wide and large spoil rings (*c.*8m internal D.), merging into each other; then runs through a band of light yellow grey clay. Runs into gardens to S of Jarma-Tuwash road, where it is traceable only as collapsed shafts in the sandy soil. **F54**: single oval shaft (1 x 0.75m at surface; less lower down), visible in gardens at 26°31.51/13°04.54. Dug through consolidated clayey sand. Depth to fill now 1.35m. **F55**: four shafts visible to S of modern Jarma. Sub-oval shape, *c.*1x0.75m; depths to fill 1.2-3m. 26°31.43/13°04.61. **F56**: Slight traces of one filled-in circular shaft at 26°31.47/13°04.60. **F57**: one circular shaft in modern gardens at 26°31.50/13°04.60. D: 75cm, depth 1.20m to fill. **F58**: one sub-circular shaft visible, dug through blue clay; depth to fill 1.30m. 26°31.49/13°04.63. **F59**: one circular shaft at 26°31.47/13°04.65. **F40**: foggara revealed by collapse at 26°31.53/13°04.89, tunnel obscured. The channel must lie at least 4m below the modern ground surface. **F41**: foggara *c.*70m E of F53. First traced at 26°31.58/13°05.26 as collapse and as a soil mark of clay spoil running through gardens; further N it shows as a series of gravel mounds *c.*5-8m apart, running towards the modern track at 26°31.22/13°05.18. **F42**: a well-defined gravel spoil bank, with depressions marking the locations of shafts. Traced for 700m from 26°30.88/13°05.20 (S of this it has been destroyed by bulldozing) to 26°31.36/13°05.27. After this it runs into modern gardens and becomes untraceable. **F43**: starts as a faint line of gravel spoil rings merging into each other; after a change in alignment the spoil mounds become larger, like gravel chimneys. ***GAR***
***Ills: AF 1*, 243, 245.**

GSC 033 Foggara group 26°31.30/13°05.52
Dendritic group of channels feeding into three main channels, drawing on area of *c.*1.6km of escarpment edge. Channels traceable over 2km maximum, with total of *c.*8km. ***GAR***
***Ills: AF 1*, 243, 245**

GSC 034 Quarry 26°29.70/13°04.20
Small areas of worked sandstone rock face on the escarpment. Photo records only. [1965]. ***GAR***
***Ills: AF 2*, Fig. 12.33.**

GSC 035 Quarry 26°30.20/13°04.86
Area of quarrying. No details available. This area appears to have been used for modern quarrying in recent years. [1967, no traces of ancient workings identified in 2000]. ***GAR?***

GSC 036 Foggara group 26°31.70/13°06.12
Small discrete cluster of channels with *c.*5 feeding 1-2 main channels; traceable over 1.2km, with total of *c.*4km in length. (see also TWE 016). ***GAR***
***Ills: AF 1*, 243, 245.**

Figure 12.33. GSC 034, quarry face (photo: CMD 1965).

Figure 12.34. GSC 040, escarpment settlement with traces of hut foundations (photo: FP 1998).

GSC 038 Cemetery 26°31.23/13°05.64
Nucleated cemetery of *c.*100-150 tightly clustered type 2 shaft burials. Close to, but distinct from GSC 025. Little surface pottery, some RS present, probably masked by robbing upcast around graves. [2000]
***Ills: AF 2*, Fig. 12.21.**

GSC 040 Escarpment settlement 26°30.40/13°04.90
An extensive settlement (*c.*100 x 30m) of drystone sub-rectangular and oval hut footings perched on a narrow shelf along the W side of a N outlier of the hamada. The site lies immediately above and E of GSC 015. The form of buildings is similar to those at ITF 001, TIN 001, ZIN 001, TWE 021, but despite a careful search no artefacts were recovered and the settlement is thus undated. Many of the structures are single room units (*c.*2.5 x 1.5m), others comprise two or more of the units butted against

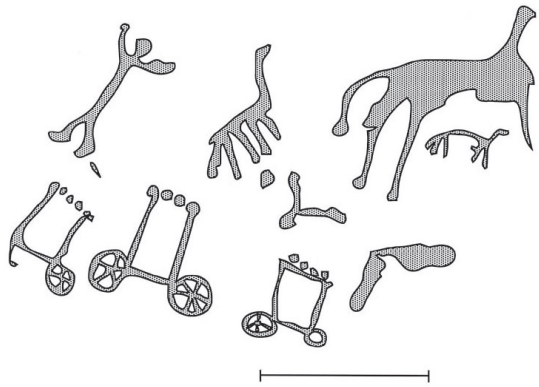


Figure 12.35. GSC 041, chariot engraving (FP 2000).

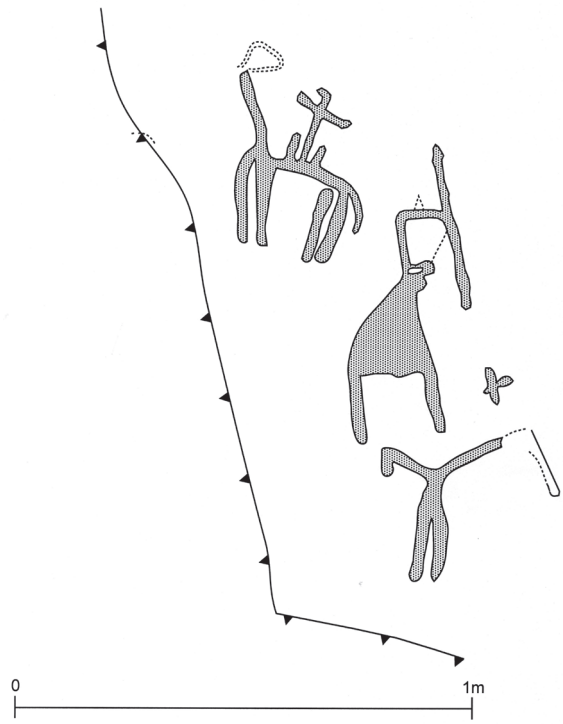


Figure 12.36. GSC 045, rock engraving of human figures and horse (FP 2000).

Figure 12.37. GSC 052, part of lithic scatter, featuring core (photo: FP 1998).

each other. While the position of the settlement is not wholly defensive, the site could have been defended against low intensity attacks. The easiest access to the site is up a broad natural ramp in the gully to E of the headland. [1999]. ***EGAR? POSTGAR?***
***Ills: AF 2*, Fig. 12.34.**

GSC 041 Rock art 26°30.32/13°05.12
Drawings of man, three horses and three chariots on large flat boulder (for detailed description and discussion, see *AF 1*, 314-17). Further engravings of cow and human figure with long legs and cow head. [2000]. ***PAST? LPAST? GAR?***
***Ills: AF 1*, 89, 315-16; *AF 2*, Fig. 12.35.**

GSC 042 Cemetery 26°30.31/13°05.16
Small group of large cairn tombs, including some type 3a drum cairns by GSC 041. [2000]. ***LPAST? GAR?***

GSC 043 Rock art, inscription 26°30.23/13°05.38
Libyan inscription and engraved woman. [2000]. ***PAST, GAR-EMOD***

GSC 044 Pottery scatter 26°30.03/13°05.69
Handmade sherd scatter, undated. [2000].

GSC 045 Rock art, inscription 26°30.29/13°05.19
Rock art and Libyan inscription on rocks facing chariot engravings. Images include biconical human figure and horse [2000]. ***GAR-EMOD***
***Ills: AF 2*, Fig. 12.36.**

GSC 046 Cemetery 26°30.28/13°05.17
Small group of cairns on south side of tributary wadi opposite GSC 042. [2000]. LPAST? GAR?

GSC 047 Rock art 26°30.25/13°05.20
Bovine engravings opposite chariots GSC 041 (for detailed description and discussion, see *AF 1*, 314-17). [2000]. ***PAST***
***Ills: AF 1*, 315-16.**

GSC 048 Cemetery 26°30.27/13°05.37
Small group of large cairns above the stream bed. [2000]. LPAST? GAR?

GSC 049 Inscriptions 26°30.36/13°05.54
Libyan inscription and Arabic graffito. [2000]. ***GAR-EMOD***

GSC 050 Rock art, inscriptions 26°29.93/13°04.83
Small group of rock art with Libyan inscriptions on W side of wadi running into escarpment. [2000]. ***GAR-EMOD***

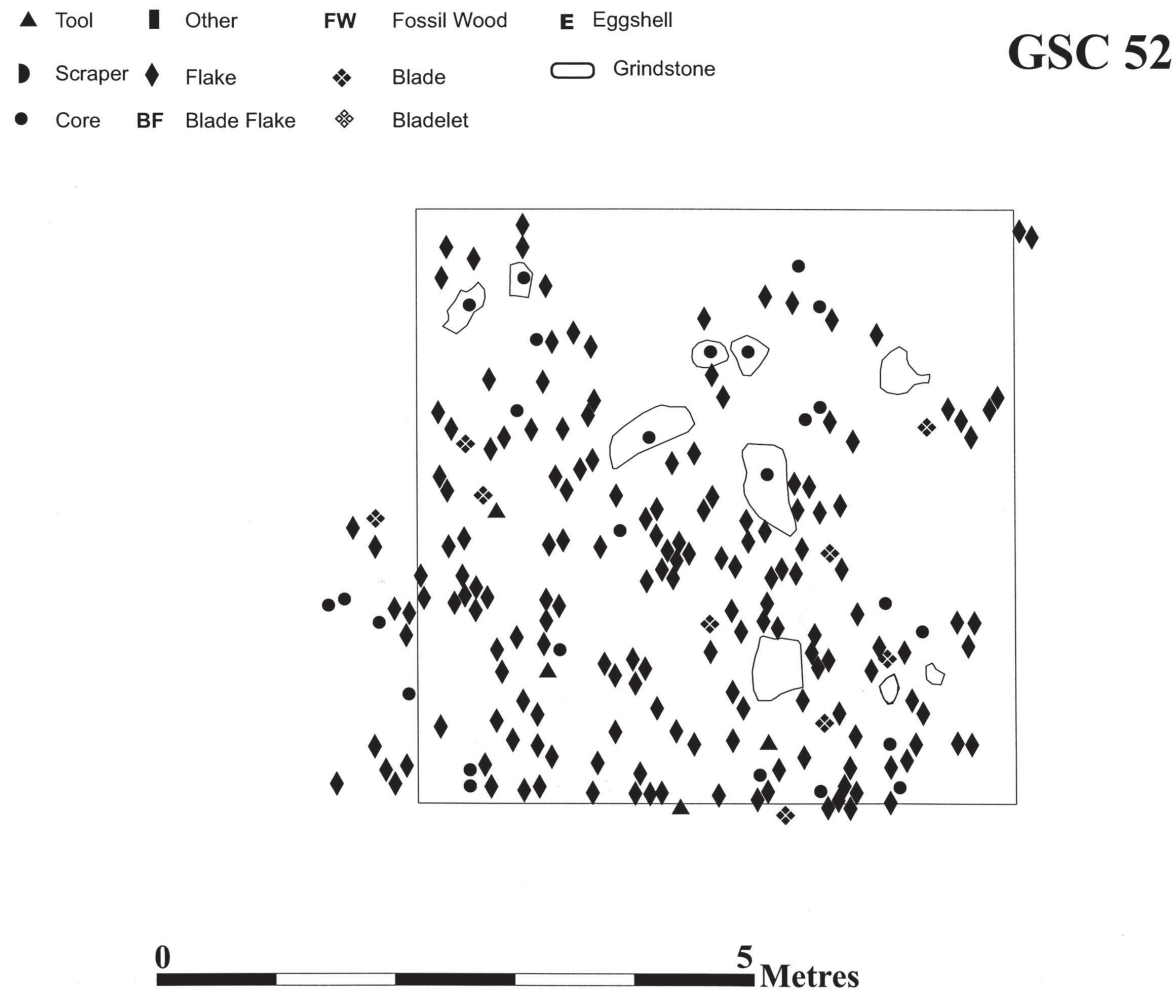


Figure 12.38. GSC 052, detailed plot of lithics scatter (FP 1998).

GSC 051 Rock art **26°30.05/13°04.91**
Small group of rock art on E side of wadi running N into escarpment. Several animal figures including ostrich and bovines. [2000]. ***PAST***

GSC 052 Lithics scatter **26°30.14/13°05.57**
Pleistocene lithics scatter, collected systematically. (=HMLS1). The yellow- and red-banded quartzite outcropping here on the Massāk plateau was exploited for manufacture of hand-axes and blades. There are some Levallois and disc core types present (Mattingly *et al.* 2000a, 242). [1998]. **PAL**
***Ills: AF 1*, 127; *AF 2*, Figs 12.37-12.38.**

GSC 053 Lithics scatter **26°29.80/13°05.34**
Pleistocene lithics scatter, collected systematically. (=HMLS3). This site was similar to GSC 052, though it developed around a larger quartzite outcrop. Two clear knapping areas were identified, one for roughing-out cores, the second for reducing and reworking smaller cores. Two individuals may have sat close together here working in tandem. The integrity of the site was high, with many refitting pieces present among the débitage (Mattingly *et al.* 2000a, 242) [1998]. **PAL**
***Ills: AF 1*, 127-28; *AF 2*, Fig. 12.39.**

GSC 054 Lithics scatter, other structures? **26°30.06/13°05.21**
Lithics scatters and possible stone structures on ledge on escarpment slopes. [1999]. **PAL**

GSC 055 Lithics scatter **26°29.60/13°05.32**
Large (*c.*35cm long) quartzite blades and quartzite outcrop on hamada plateau (=HMLS 4). The lithics collection from this site, close to GSC 052, comprised four giant blades of quartzite. No tools or dateable material was collected. Compare also site GSC 056. [1999, 2000]. **PAL**
***Ills: AF 2*, Fig. 42.3.**

GSC 056 Lithics scatter
Another four giant blades were retrieved from this site, close to GSC 053. Again no retouched pieces were picked up. Compare also site GSC 055. **PAL**
***Ills: AF 2*, Fig. 42.3.**

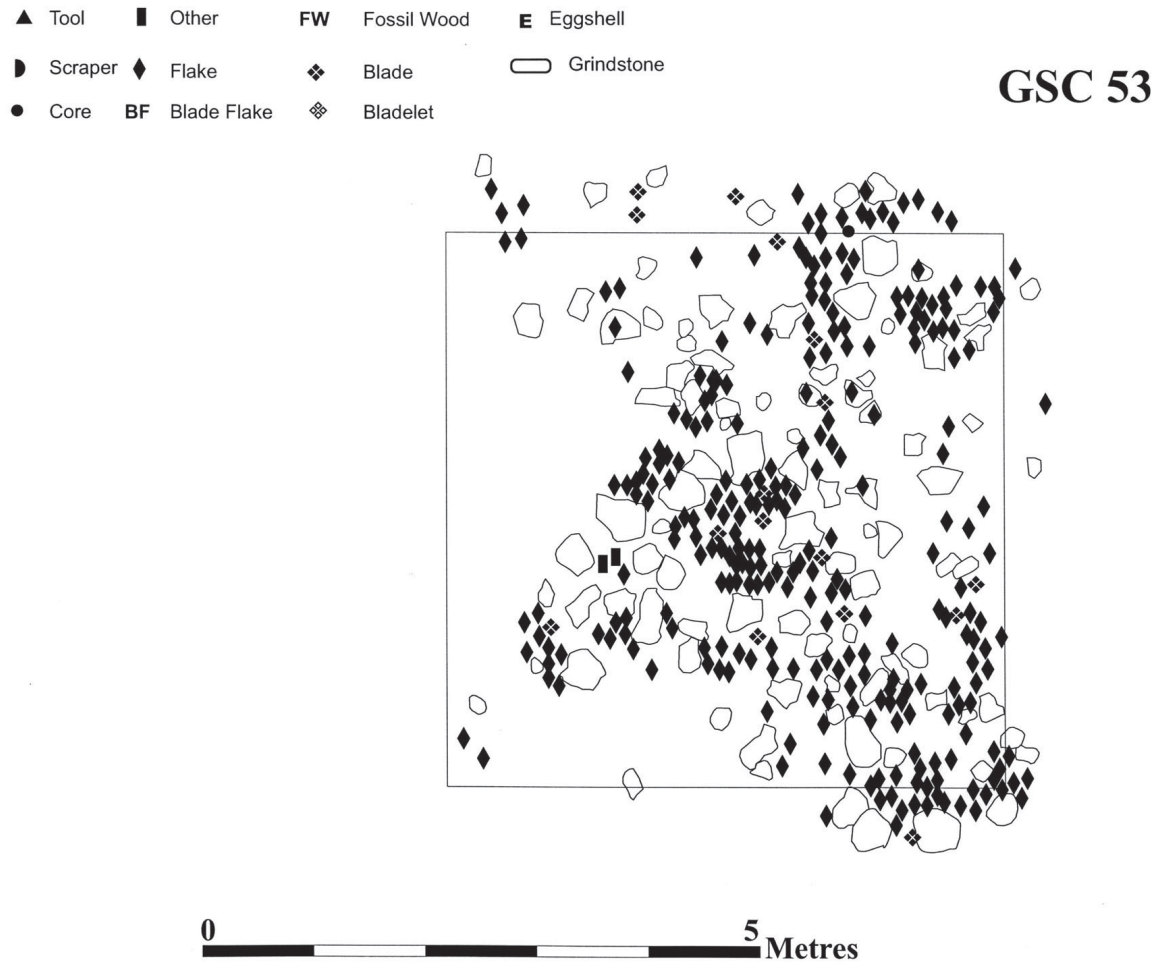


Figure 12.39. GSC 053, detailed plot of lithics scatter (FP 1998).

GSC 061 Grave? 26°30.77/13°04.63
Stone scatter by foggara, probably a grave, of unknown date.

GSC 062 Occupation? 26°31.1/13°04.40
Scatter of stone (*c.*20 x 20m) and poorly-fired pottery (concentrated in 2 x 2m area).

GSC 063 Grave? 26°30.87/13°04.75
Small scatter of stones and a few sherds of coarse pottery, possible grave.

GSC 064 Grave? 26°31.16/13°04.61
Small pot scatter (2 x 1m) and some stones. Possible grave.

GSC 065 Settlement? 26°31.33/13°05.21
Dense sherd scatter (*c.*100m across) – including fineware, wheelmade and handmade wares – by foggara F53 in GSC 032 group. [1998, 1999]. ***GAR?***

SECTION 13. TUWASH [TWESH] (TWE)

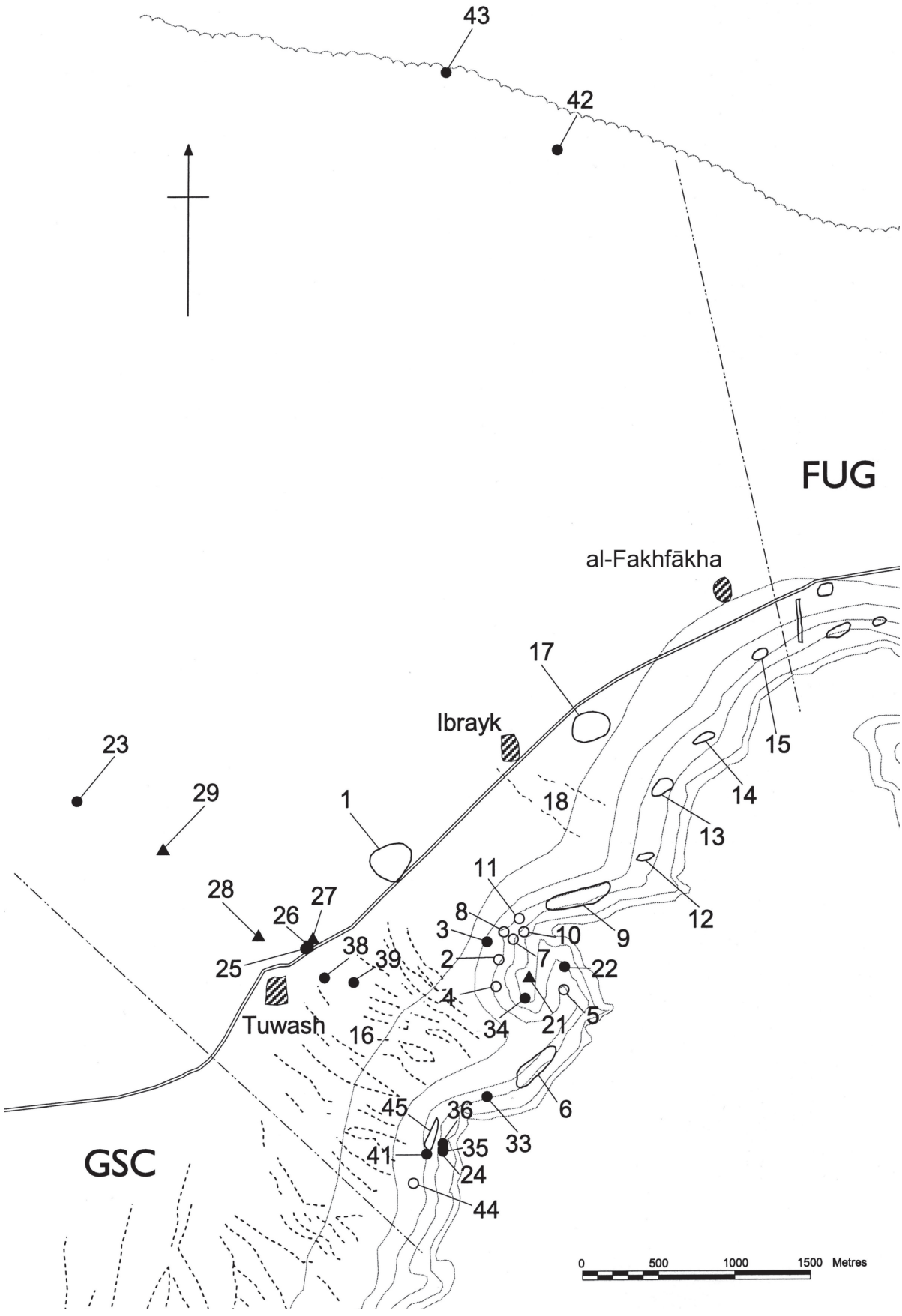


Figure 13.1. Map of sites in Tuwash sector (CMD/FP).

This survey area follows the escarpment edge towards the al-Fugār headland, with two substantial early modern village settlements, at Tuwash (Scarin 1934, 91-92, plan and discussion; 1937b, 625 – 383 inhabitants, 1,300 date palms) and Ibrayk (Scarin 1934, 92-93 plan and discussion; 1937b, 624-25 – 321 inhabitants, 8,000 date palms), and a minor settlement at Fakhfākha. Scarin (1934, 96-98) also discusses and reproduces plans of the early modern mosques at Tuwash and Ibrayk. The site of a further large, probably Islamic/early modern enclosed settlement (TWE 017) has been identified just to the E of Ibrayk (seeming to correspond with one of a series of historic moves of the place-name within the close vicinity (*AF 1*, 159; Despois 1946, 97; Scarin 1934, 93 (plan); 1937b, 624). These were still compact nucleated settlements in the 1960s (Figs 13.2-13.3), but have since greatly expanded and much of the walled village of 'Old Tuwash' is now abandoned (*AF 1*, 145). and is starting to be demolished in parts. Initial work in 1963 and 1965 focused on the 'mausoleum' cemetery (TWE 001) with further ground survey in 1971 and 1977 locating the main 'sites' along the escarpment. No detailed surveys of individual sites were carried out. Numerous Garamantian stele and offering tables were collected in the area, not all of which can be identified with specific sites (Figs 13.4-5). This area is also important for the large and dense groups of foggara channels found close to Tuwash village (especially TWE 016), which, while increasingly eroded by modern cultivation and settlements were still well preserved in the 1950s-1960s. Some further survey was carried out by FP along the escarpment edge and parts of the Wādī centre in 1999-2000.

***Ills: AF 1*, 245; *AF 2*, Figs 11.2, 13.1-13.5.**

TWE 001 Cemetery (pyramid?), mausolea, inscription **26°33.01/13°06.37**

Cemetery located between Sāniat Sharif al-Mahadi and Sāniat Alowah on the NW side of the Jarma-Tuwash road. Test excavated in 1963 with further trenching and survey in 1965. Survey and excavations revealed the stone foundations of three 'mausoleum'-type tombs surrounded by what appears to be an Islamic period cemetery with graves marked by small stony mounds, including some material robbed from the 'mausolea'. Some 250m to the N, the remains of two mudbrick tomb superstructures were found, at least one probably a pyramid form, along with fragments of a stele. Given the relatively large distances separating these features and poor visibility

Figure 13.2. View of Tuwash village in the 1960s (photo: CMD 1963).

Figure 13.4. Type 9 stele from Tuwash area, possibly TWE 002 (photo: CMD 1963).

Figure 13.3. Marabout tomb and islamic cemetery on NE side of Tuwash village (photo: CMD 1963).

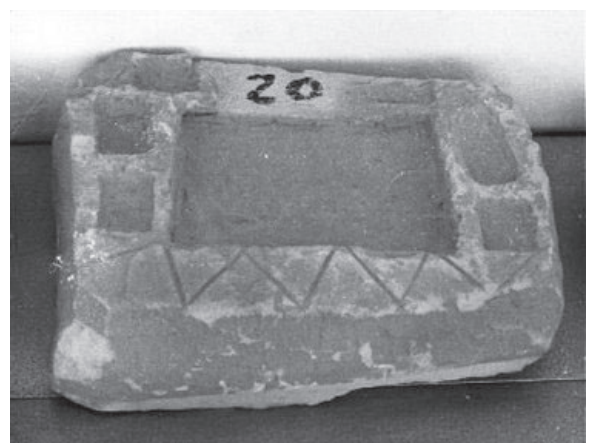


Figure 13.5. Type 4b offering table, from Tuwash area, possibly TWE 002 (photo: CMD 1963).

of intermediate features, it is not certain whether we are dealing with a single large cemetery here or several separate burial areas. Small quantities of pottery recovered from the area confirm a Garamantian date for some of the features.

The largest of the stone structures Tomb 1 (**TWE 001/1**) measured *c.*8.1m x 6.2m and 1.2m high. Three stepped courses were preserved on the N, W and S sides, with a single block from a fourth stone course on the S side. The sides were constructed of tightly fitted faced blocks enclosing a rubble core. No evidence was found for any burial within/beneath the structure. One block on the W face was heavily worn and had several incised marks on it. Traces of possibly two Libyan inscriptions were recorded on the exposed upper surface of another block. Excavation produced rare sherds from surface and core, a small fragment of a moulding, and part of a blue glass bead (D:8mm)

The second structure (**TWE 001/2**) lay *c.*50m N of TWE 001/1. Only small parts of the stone casing were preserved, mainly in the SE corner, but the original dimensions were estimated to have been very similar to the first structure, measuring *c.*7.9m x *c.*6.1m. It again had a rubble core, through which a sondage was cut, which failed to find any trace of a burial.

The third mausolea **TWE 001/3** lay *c.*25m NW of 2 and was smaller than the other two and aligned differently (1 and 2 being more or less E-W, while 3 is NW-SE).

TWE 001/4: was a well-preserved mudbrick 'pyramid' superstructure on the edge of Sāniat Alowah. The core measured *c.*1.35m x 2.1m and stood *c.*2.2m high. A broken type 6 stele (77 x 74cm) was found on the Sāniat fence-line just to the S.

Datable sherds include ARS of late 1st- early 2nd century AD, and possible imported Italian RS. **PUGAR, CGAR, [EMOD],** ***GAR-EMOD***
Ills: AF 1**, 190-91;** ***AF 2*****, Figs 13.6-13.11.**

TWE 002 Cemetery 26°32.60/13°06.66
Large nucleated cemetery at base of escarpment with further components (2B-C) further up slope. By April 1977, the lower areas (2A) had been very heavily robbed for stone and largely destroyed. Parts of 2B, across gully to SW, survived at that time; with a band of dispersed graves continuing up the spur above (2C). In the central area (2B) a large square stone (*c.*1m square) with a large central hole lying on the side of the gully running along E side of graves.

Originally identified with same number as another 'Royal cemetery' and incorporates cemetery areas previously numbered 3 and 4, renumbered as 2A, 2B and 2C in 1977. Limited sherd material, includes amphorae, flagons, handmade jars and some ARS. [1977]. **CGAR**
Ills: AF 2**, Figs 13.12-13.14.**

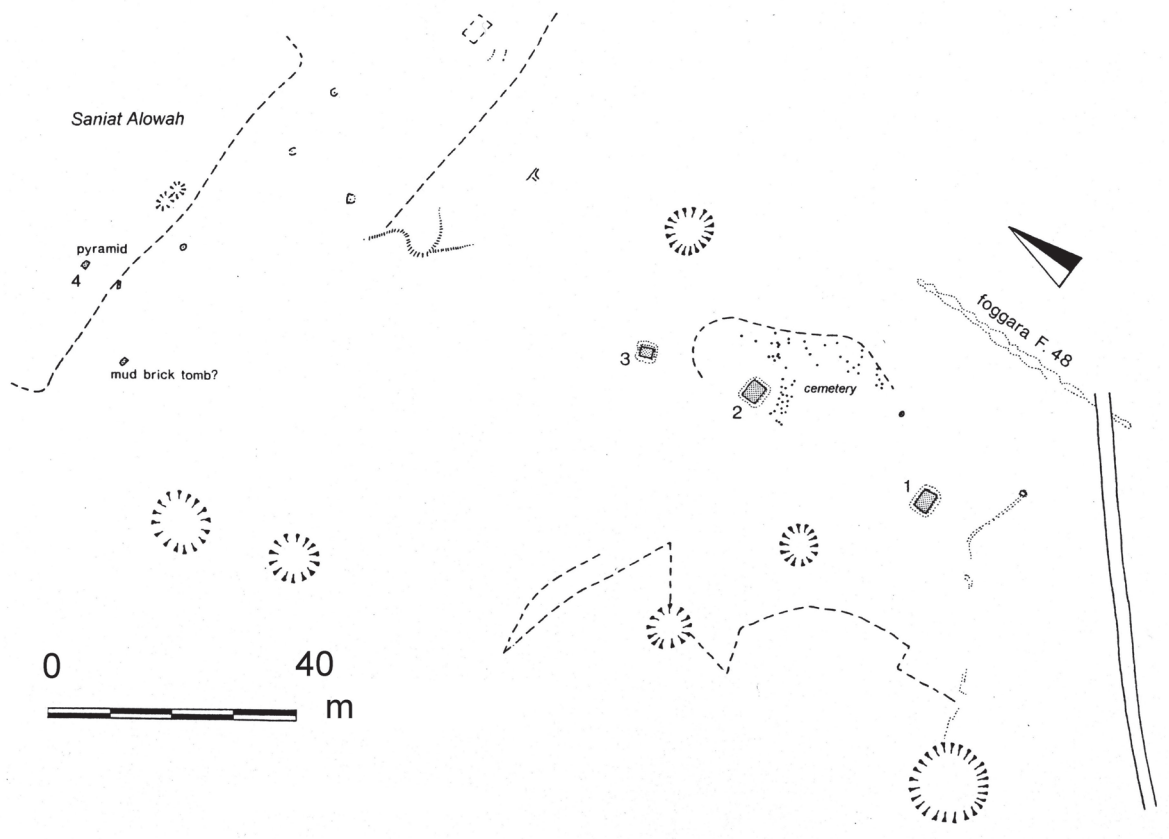


Figure 13.6. TWE 001, general plan (FP adapted from CMD 1965).

Figure 13.7. TWE 001.1, mausoleum 1, after excavation, looking NE (photo: CMD 1963).

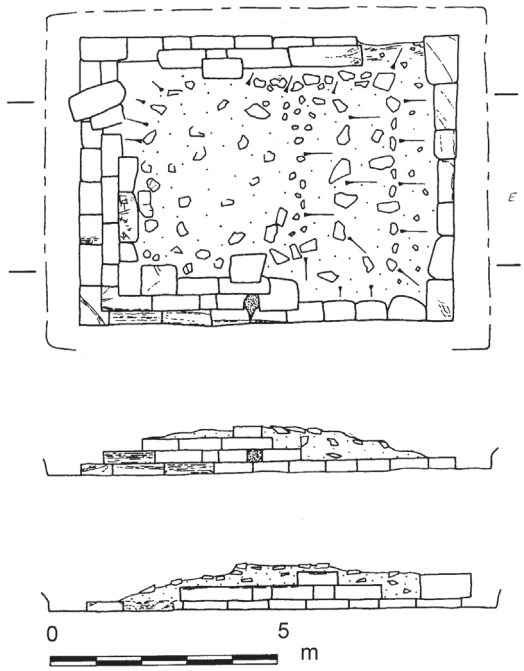


Figure 13.8. TWE 001.1, plan and elevation of mausoleum base (CMD/FP).

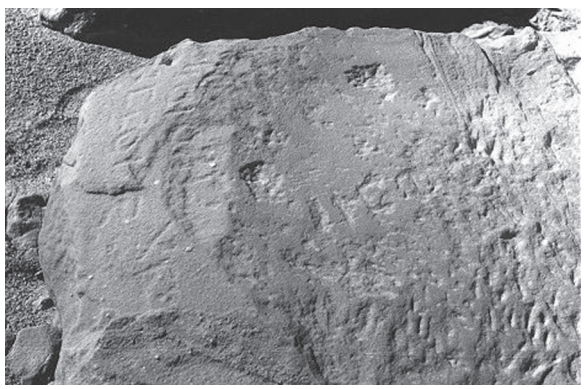


Figure 13.9. TWE 001.1, Libyan graffiti on block in mausoleum base (photo: CMD 1963).

Figure 13.10. TWE 001.2, base of mausoleum 2 after excavation, looking W (photo: CMD 1963).

Figure 13.11. TWE 001.4 Mudbrick 'pyramid' tomb superstructure (photo: CMD 1965).

Figure 13.12. TWE 002, cemetery with piles of stone robbed from graves (photo: CMD 1965).

TWE 003 Lithics scatter 26°32.50/13°06.60
Lithic scatter NW of TWE 002, renumbered as this in 1977. No pottery recovered from site. [1971, destroyed by 1977]. ***PAL?***

TWE 004 Cemetery 26°32.40/13°06.66
Dispersed cairns to SW of TWE 002, identified as earlier types with 'largish cairns', well spaced at foot of escarpment. [1971, 1977]. **PUGAR**

Figure 13.13. TWE 002, an unusual type 2 stele, with four roughly equal length digits separated by deep grooves (photo: CMD 1965).

Figure 13.14. TWE 002, fragments of stele of types 3, 4, and 5a/c (photo: CMD 1965).

Figure 13.15. TWE 012, cemetery general view (photo: CMD 1977).

TWE 005 Cemetery 26°32.50/13°06.90
Cemetery in gully to E of promontory, identified in 1971. No further details and not visible on APs. A few handmade sherds on surface. [1971]. ***LPAST? GAR?***

TWE 006 Cemetery 26°32.30/13°06.78
Dispersed cemetery along lower slopes of escarpment edge, with distinct clusters of 3-12 cairns, but no major core area. No surface sherds. [1977]. ***LPAST? GAR?***

TWE 007 Cemetery 26°32.70/13°06.72
A small compact cemetery to NE of TWE 002. Surface sherds noted, including RS. [1977]. **CGAR**

TWE 008 Cemetery 26°32.71/13°06.73
Small group of graves in line along gully edge; TWE 007-8 noted as small spread between TWE 002 and 010). [1977]. ***GAR?***

TWE 009 Cemetery 26°32.80/13°06.84
Dispersed cairn cemetery on lower slopes with no distinct clusters. No pottery recovered. Robbed for stones in 1970s. [1971, 1977]. ***LPAST? GAR?***

TWE 010 Cemetery 26°32.80/13°06.72
Cemetery against side of slope in two main parts: 10A with 20-30 tombs, with 10B below in area cut by gullies. Conjoining sherds from both areas noted. Some RS. [1971, 1977]. **CGAR**

TWE 011 Cemetery 26°32.81/13°06.73
Cemetery below and distinct from TWE 010, heavily robbed for stones by 1977. [1971, 1977]. **PUGAR, CGAR, LGAR**

TWE 012 Cemetery 26°33.00/13°07.26
Type 2 dispersed cemetery of 50-70 cairns including large, if quite irregular type 3a drum cairns of rough stone. Lower graves in particular robbed for stones in 1970s, but many survived on higher slopes. Cairns circular, although one oblong example noted and one cluster of three adjoining cairns. Some on NW edge have rough sandstone slab stele and proto-tables on E side. No pottery noted. [1971, 1977]. ***PUGAR?***
***Ills: AF 2*, Fig. 13.15.**

TWE 013 Cemetery 26°33.30/13°07.26
Compact cemetery of 20-30 tombs (densest group in this part of the escarpment), between two gullies. Fragment of stele in two pieces. A further scatter of large isolated cairns, some well down slope, between here and TWE 012. ***PUGAR, CGAR***

TWE 014 Cemetery 26°33.50/13°07.50
Small dispersed cemetery of 20-30 graves along slopes, largely robbed for stone in 1970s. ***LPAST? GAR?***

TWE 015 Cemetery 26°33.70/13°07.56
Large cemetery, almost totally destroyed by 1977, with a scatter of cairns continuing along escarpment slopes to the E . **CGAR**

TWE 016 Foggara Group 26°32.60/13°06.48
A dense group of foggaras by Tuwash and to the W. The W group (see also GSC 036) is a dendritic system, similar to GSC 033, but the exceptionally dense cluster S and SE of Tuwash village appear to have had a complex evolution,

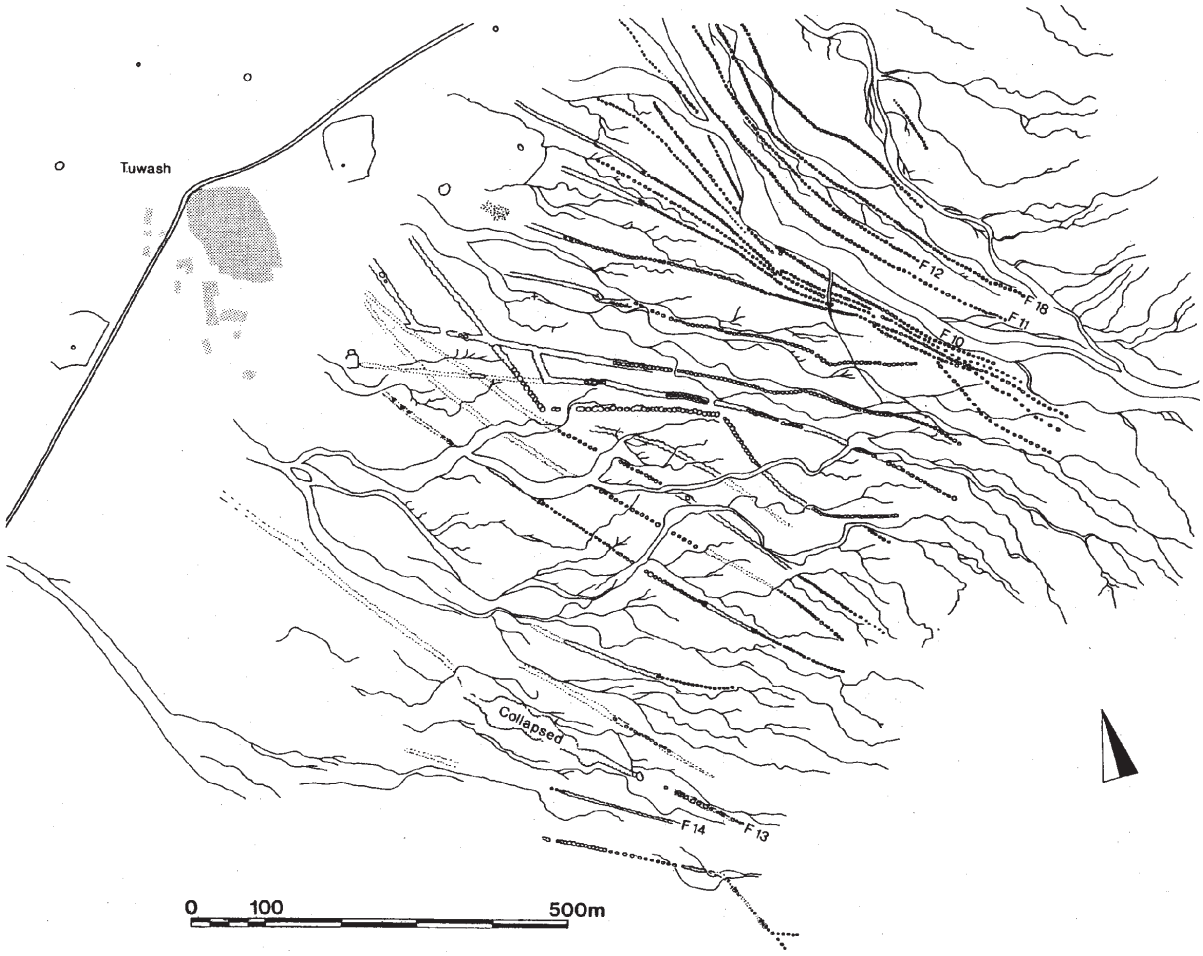


Figure 13.16. TWE 016, dense cluster of foggaras (FP from 1968 air-photo).

but is now mostly obliterated by modern bulldozing. A few foggaras (F10, F11, F12, F18) from the E edge of the cluster are still visible close to the escarpment while several foggaras (F13-F17) are also still preserved on the W edge, due S of the old Tuwash village.

F10: runs alongside a wadi watercourse, which has destroyed part of this foggara; the entire course of the foggara is threatened on the W side by a bank of gravel heaped up by modern bulldozing. The mother well is collapsed (spoil ring internal D:3.2m, external D:6.5m). Shaft intervals are 8m centre to centre (measured on the first three intervals). The first 25 shafts are collapsed; shaft 26 is still partly open (for a depth of 3m) and is steined. Shafts 27-28 have collapsed, but their mouths are fairly clear; 29-30 are open, but unsafe. Shaft 31 is *c.*9.7m deep (to fill?); its opening is 67 x 57cm and steined with undressed blocks measuring 20-30 x 15 x 10cm thick. Shaft 32 is collapsed; 33 is open, 7.9m to fill, with a steined opening 70 x 75cm wide. Shaft 34 is collapsed; 35 is open for the first 3m only; 36-41 are collapsed. Shaft 42 is open for 5.5m but collapsed further down; it has a steined opening measuring 1.30m x 75cm. Shaft 49 is partly open. After shaft 56 the foggara has been destroyed by gravel extraction, a modern track, and irrigated gardens. **F11**: runs along W side of a garden to the E of F10. Mainly visible as spoil rings of gravel; occasionally a shaft is partly open. Many rings are partly covered by recent bulldozing. One steined shaft was measured as 6.3m deep to fill; opening 85 x 60cm. Shaft interval 7.5–8m centre to centre. Four spoil rings are of yellowish grey clay, adjacent to a modern well. **F12**: a few spoil rings (*c.*8) survive before the gardens, below TWE 021. Shaft interval: *c.*6.7m. **F13-15** (*c.*26°31.9/13°06.24) were originally recorded as GSC 037, but properly belong with TWE 016. Compact group of channels over *c.*600m, with 6-7 main channels; traceable over 1.1km, with a total of *c.*5.5km in length. **F13**: originates among cairns at the foot of the escarpment. First shaft spoil ring has 4m internal diameter. Shaft intervals for first four shafts: 6m, 5.5m, and 6.5m (centre to centre). The spoil rings are initially gravelly, but then come seven rings formed of large heaps, 1.25-1.5m high, of predominantly bluish-grey clay. External diameter of these rings is 7m, with 3m intervals between the exteriors of successive rings. After these bluish-grey spoil rings the foggara splits into two roughly parallel banks of gravel and stones ≤3m high, either side of an open (or more likely collapsed) channel. Several unstratified sherds of handmade grey-black pottery were recovered from the W bank. Maximum external width across spoil banks is 22m at S end; internal width

Figure 13.17. TWE 016, looking NW along two well-preserved foggara lines. The lithic sites TWE 035 and 036 are on the slope in the foreground (photo: FP 1998).

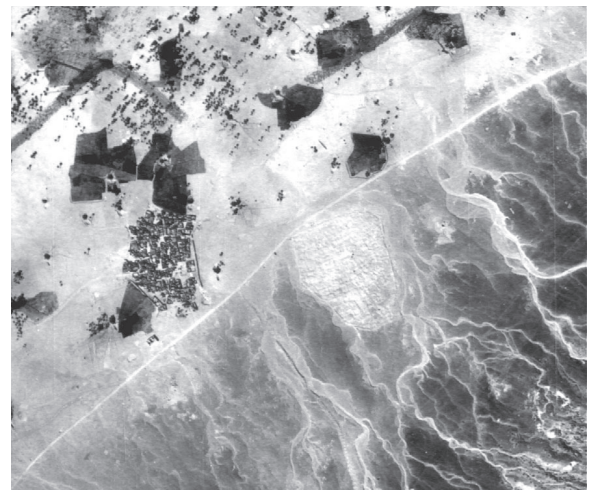


Figure 13.18. TWE 017, the abandoned settlement of old Ibrayk.

12.5m; normal width: external 14.7m; internal 4m. The foggara channel widens out and then becomes untraceable near the S edge of modern Tuwash village, under new construction development. **F14**: originates by graves at the foot of the escarpment S of Tuwash. At the very first shaft of the foggara, sherds of a 'Berber Red' coarseware were collected from an ashy deposit partly overlying the foggara spoil ring. Roughly level with the clay spoil rings of F13 are a series of clay heaps similar to those of F13, but here merged into a continuous bank. Shafts are spaced 4.5-5m centre to centre. The stretch equivalent to the parallel banks of F13 is in F14 a series of better defined gravel spoil rings. Then comes a run of several well-preserved spoil rings, with internal diameters 3.5m. Then comes a wide low bank, disturbed by modern activity, before the foggara becomes untraceable by the S edge of Tuwash. **F15**: Starts among cairns at the foot of the escarpment, fed by two short tributaries. Gravel spoil rings 3.5m internal diameter, shaft intervals 6m. Foggaras to the W of **F15** were not recorded in detail on the ground. **F18**: starts among cairn graves below TWE 021, to the E of F12. Shaft interval *c.*7m. After the 15th shaft a stretch of the foggara has been destroyed by bulldozing, and then modern irrigated cultivation obliterates the rest. **F19**: traces only survive in an area otherwise completely bulldozed; the foggara is visible for 24 or 25 shafts in a line running at 300° among bulldozing debris. **F44**: starts at 26°31.96/13°06.25 as a bank of gravel spoil rings, merging with each other, and with centres *c.*4m apart. Damaged on E side by bulldozing. Becomes indistinct in bulldozing at 26°32.06/13°06.16. **F48**: foggara channel on E side of TWE 001 cemetery. Seems to be the continuation of the most E foggara of the TWE 016 group. In 1999 no surface traces were visible in the cemetery area, but the channel was partially exposed in a modern machine-dug rubbish pit. Limited excavation and cleaning was undertaken to expose and record the section and channel infill sequence. The channel is dug in clay, below which are layers of sand. Above the channel are laminated compacted sand layers, some of which have remained intact despite the collapse of the clay channel roof below, leaving a partial void between the upper fragments of collapse and silting. Distinct silting layers are evident over the floor of the foggara channel, suggesting ponding of water (perhaps due to a downstream blockage); above this are layers of water-deposited sand and then the collapsed roof. The original channel dimensions were probably *c.*80cm wide x 1.20m high. Some disturbed Holocene lithics collected around various spoil mounds. [1999]. ***GAR*** **[PAST]**
Ills: AF 1**, 236, 244-45, 248, 251, 257-58, 274;** ***AF 2*****, Figs 13.16-13.17.**

TWE 017 Enclosed settlement **26°33.50/13°07.20**

Site of abandoned walled village just to E of Ibrayk, probably early-modern in date. Visible on AP plots and not further investigated. Despois (1946, 97) reported the local history of several relocations of Ibrayk in 'recent' times as a result of flood and scorpion infestation. The remains here presumably mark one of these alternative Islamic/early modern manifestations of the settlement.
ISLAM, EMOD
Ills: AF 2**, Fig. 13.18.**

TWE 018 Foggara **26°33.20/13°07.08**

Two isolated foggaras *c.*1km NE of TWE 016. Parallel channels *c.*350m apart, traceable over a maximum of 650m from AP coverage. ***GAR***
Ills: AF 1**, 245.**

TWE 021 Escarpment settlement **26°32.60/13°06.84**

A substantial enclosed site on a prominent spur of the hamada. The site was suspected by CMD who had marked 'check' on one of his maps, but was first investigated by FP in 1998 (Mattingly *et al.* 1998b, 129-30). It comprises a N-S aligned promontory attached to the hamada proper on its N side by a narrow land bridge that is defended by two transverse walls. The site is approached by a track

Figure 13.19. TWE 021, escarpment settlement on a narrow peninsula, with the neck protected by two walls visible centre, looking SW (photo: FP 1998).

Figure 13.20. TWE 021, internal sub-rectangular buildings within escarpment settlement (photo: FP 1998).

up the gully to its E side, passing a rock step and rock shelter (TWE 022) where a cluster of Libyan inscriptions was found. Inside the enclosed area there are the remains of at least 100 structures. Finds are extremely sparse within the site, but some early impressed handmade ware suggests that use of the site originated before the 'early Garamantian' period. Finds of Roman and late Roman pottery on the approach track suggest some continued use of the site at later dates, perhaps as a refuge.

The more N (outer) defensive wall is *c.*60m long, with a rather meandering course, built in rough-coursed drystone masonry, with the best preserved section towards the W end still standing 1.7m high (18 courses) x 1.7m wide (base)/1.2m (top). Some larger blocks at foundation level were set orthostatically. Near the E end the wall widens and splays inwards on either side of a 1m wide x 3m long gate passage. There are a series of later enclosures or graves built onto both sides of the wall. A graffito or pictograph of uncertain type was noted on an isolated boulder S of and near the W end of the wall. There are no signs of free-standing structures between the inner and outer walls and it is possible that this area was used for the stockading of animals in times of trouble.

The inner wall is *c.*95m long, again following a meandering course along a break in slope, with the ground

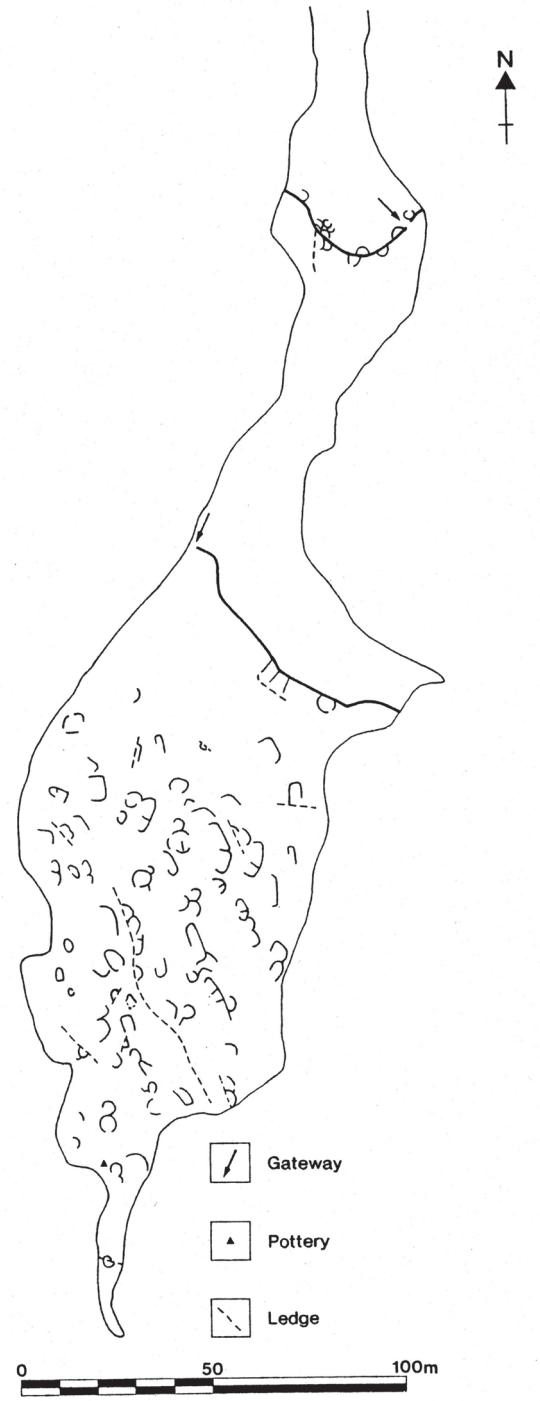


Figure 13.21. TWE 021, detailed survey of escarpment settlement (FP 1998).

sloping away to the N exterior side. There are possible gaps for gates at both the E and W ends of this wall where it meets the cliff on either side of the promontory (the E example appears the more likely). The construction seems to comprise rough-coursed slab-like blocks of varying sizes (60-70 x 25-40 x 10cm, 30-40 x 15-25 x 5-10cm). The wall is rather collapsed and its original height is hard to judge (highest surviving section is only 1.4m), but the natural slope and the use of rocky outcrops as foundation will have enhanced the obstacle. A number of rectangular

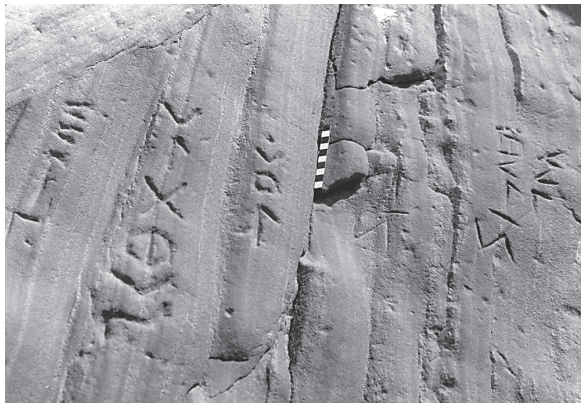


Figure 13.22. TWE 022, Libyan inscriptions on surface above rock shelter (photo: FP 1998).

Figure 13.23. TWE 023, plan of irrigation systems or salt works N of Tuwash (FP 1999).

or oval structures are built against the inner face of the wall and some of these are similar in size and construction to other hut footings further into the interior of the site.

The interior of the hillfort slopes upwards to the S from the inner defensive wall and a large number of buildings are terraced into the slope as well as on the high plateau at the extreme S end of the site. The buildings often make use of natural rock formations for one or more wall footings, but elsewhere are demarcated by low stone footings, often of orthostatic blocks, width varying 50-90cm, height generally 50cm. The small quantity of rubble would suggest that the upper portions of the huts were constructed in more perishable materials. Most of the structures are sub-rectangular or oval with one or two 'rooms', generally *c.*4-5 x 2m, with few examples only of

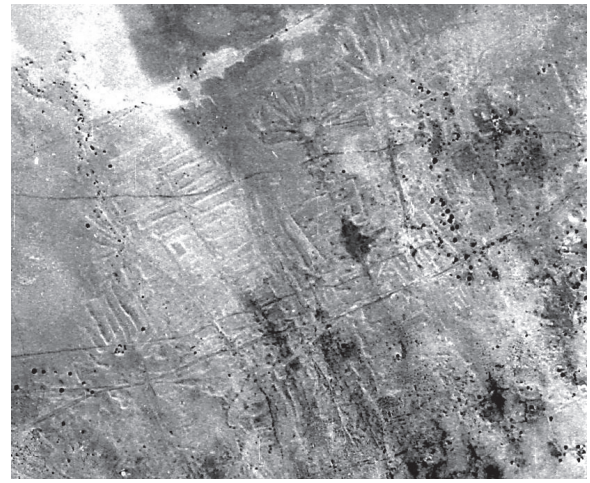


Figure 13.24. TWE 023, air-photo of the radiating channels and linear embankments.

more complex sets of contiguous rooms/huts. The interior ground surfaces of most buildings (not necessarily their original floors) were well trampled – suggesting continued use of the site for shelter by animals in more recent times. In general, the more N buildings terraced into the slope are of elongated rectangular form and up to 13m long, whilst the buildings near the S end of the site are smaller and rounder. It is uncertain whether these distinctions relate to chronological differences or simply to the terrain.
EGAR, PUGAR? LGAR?
***Ills: AF 1*, 141; *AF 2*, Figs 13.19-13.21.**

TWE 022 Inscriptions, cave 26°32.60/13°06.90
At the head of the gorge up which the approach track to hillfort TWE 021 ascends the escarpment, there is an overhanging formation of harder sandstone, which has clearly been modified for use as a rock shelter. The final ascent to the hillfort involves a scramble up over this ledge and, at the most obvious point to attempt this, a group of 11 Libyan inscriptions was found. Nos 1-6 were cut on a gently sloping rock face facing SW, with *c.*10cm between each of them (apart from 5 and 6, which were adjacent). Nos 7-10 were cut on a vertical face just to the E of the first group, facing W, each column very close to the next. The final inscription (no. 11) was noted at the top of the ascent, about 10m N of nos 1-10. ***GAR-EMOD***
***Ills: AF 2*, Fig. 13.22.**

TWE 023 Field systems? 26°33.30/13°05.16
Extensive area of surface features to N of Old Tuwash village. Identified on AP coverage, these appear as radiating features from long N-S oriented banks, probably water channels within an area of cultivated land fed by the TWE 016 foggaras (*AF 1*, 254-56). Something similar may be indicated in a sketch plan of features in the Jarma area produced by Scarin (1934, 87). An alternative possibility is that the radiating embankments delineated salt pans for production of salt by evaporation and purification. There are nearby 'industrial sites' (TWE 028-29) that may be

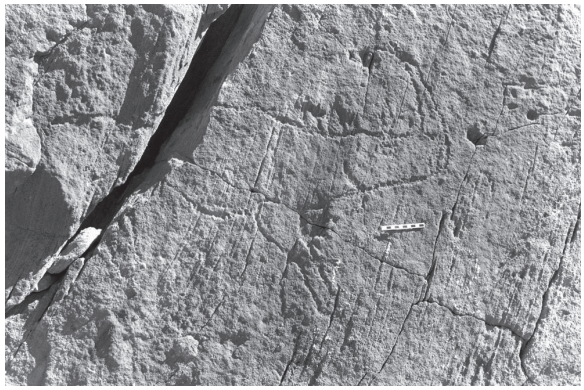


Figure 13.25. TWE 024, engraving of a bovine with large horns (photo: FP 1998).

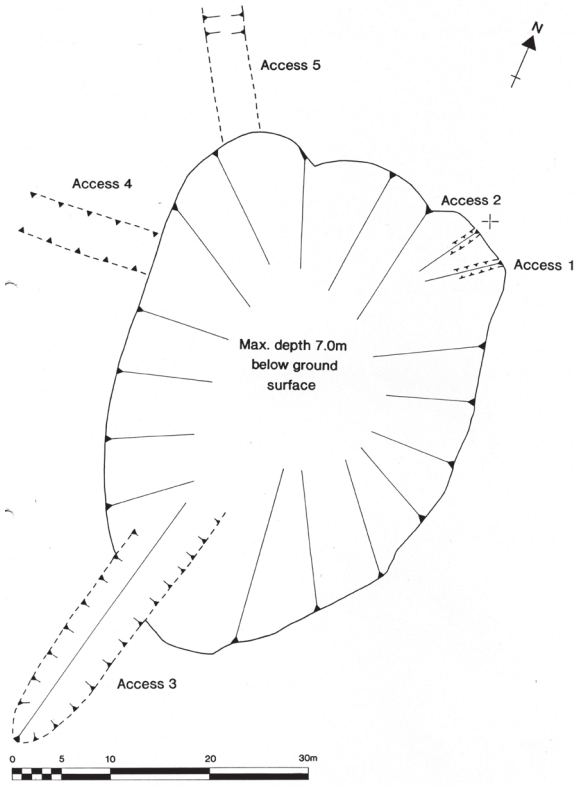


Figure 13.26. TWE 025, large well with several animal walkways (FP 1999).

linked. The area was crossed by several trackways in late 1950s which has blurred the evidence somewhat and the preservation today is poor. ***GAR?***
***Ills: AF 1*, 254; *AF 2*, Figs 13.23-24.**

TWE 024 Rock art, inscription **26°32.05/13°06.47**

A large isolated boulder of squarish shape lies on the pediment slope to the N of the escarpment face. It is decorated on its N face with an engraving of a human and an elephant and on its E face a Libyan inscription in two columns of four symbols and an engraving of an unidentifiable animal. ***PAST, GAR-EMOD***
***Ills: AF 2*, Fig. 13.25.**

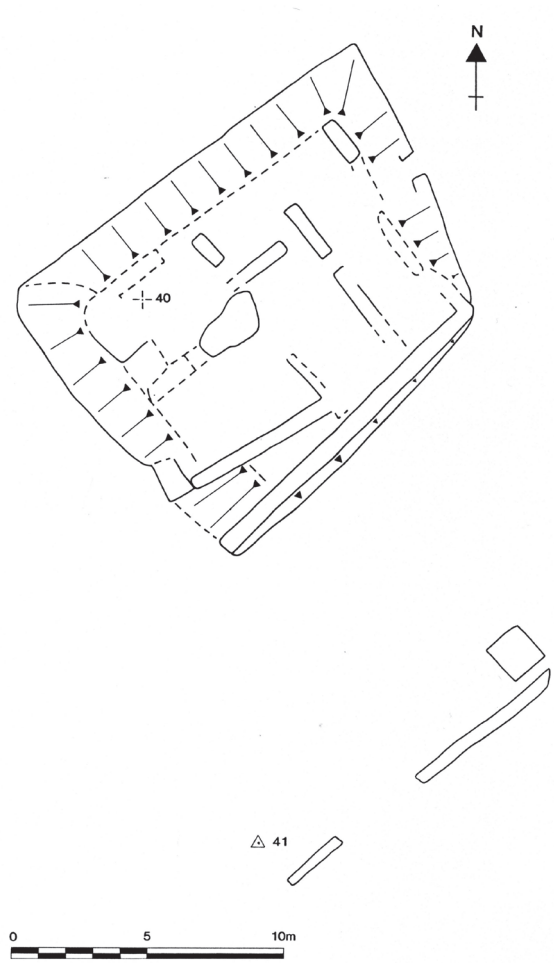


Figure 13.27. TWE 026, qasr *close to well TWE 025 (FP 1999).*

TWE 025 Well **26°32.75/13°05.99**

An unusually large and deep well *c.*100m SW of *qasr* TWE 026. The well depression is of large size (*c.*55 x 35m x 7m deep), with linear depressions leading out to the NW, W and SSW. These are identified as animal tracks on which animals will have been marched back and forth to haul up water. Two smaller trenches cut into the NE side of the depression may have been associated with the setting of the well superstructure, or allowed access to it. No trace of the actual superstructure now survives**.**
ISLAM-EMOD?
***Ills: AF 2*, Figs 11.2, 13.26.**

TWE 026 *Qasr* **26°32.80/13°06.00**

Qaṣr Tuwash ash-Sharqī. A mud-brick *qasr*, *c.*15 x 13m, standing 5-6m high, situated to the NE of well TWE 025. The lower part of the outer walls has a slight batter and appears to be founded in places on stone foundations. The ground floor of the structure is completely infilled by collapsed rubble, but elements of the first floor plan were recoverable. The first floor was divided into at least six rooms or spaces, of which a narrow corridor-like space in the SW corner may have been a stairwell. The original

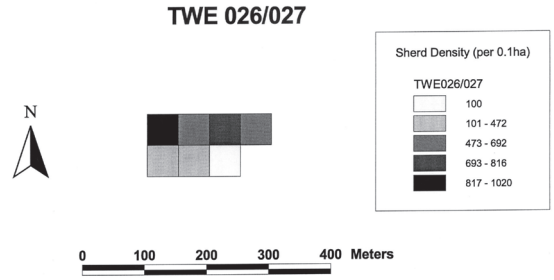


Figure 13.28. TWE 026/027, pottery distribution in 50 x 50m grid survey area between qasr *TWE 026 and well TWE 025 (FP 1999).*

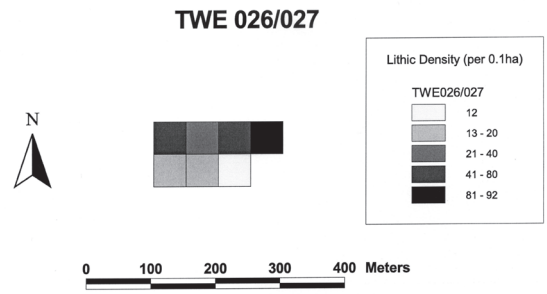


Figure 13.29. TWE 026/027, lithics distribution in 50 x 50m grid survey area (FP 1999).

entrance seems to have lain in the NE side. To the S, there are slight traces of a further structure and fieldwalking suggests that there were once further buildings around. Finds from around the *qasr* span the Roman and Islamic periods, it seems reasonable to interpret the evidence as indicating an Islamic *qasr* lying over a Garamantian settlement (see below TWE 027). [1999]. **CGAR, ISLAM, EMOD**
***Ills: AF 2*, Figs 11.2, 13.27-13.29.**

TWE 027 Settlement? 26°32.78/13°06.01
A sherd scatter, noted between TWE 026 and TWE 025 was collected in grids, providing dating material for the *qasr* but also indicating the presence of an earlier site, probably a settlement. There is a strong presence of Roman period material, including several sherds of 1st-2nd century AD date. [1998]. **CGAR, ISLAM, EMOD**
***Ills: AF 2*, Figs 11.2; 13.28-13.29.**

TWE 028 Settlement, industrial site 26°32.82/13°05.82
A possible mudbrick structure associated with a considerable spread of Garamantian period pottery and a series of concentrations of ash and non-metalliferous industrial residues – probably related to salt making. The overall area covered by the site extends to several ha, with numerous possible hearth positions noted. There is also some limited evidence for iron working here. The site lies *c.*0.5km E of GER 016. Sherds include 1st-4th century AD material. **CGAR**
***Ills: AF 2*, Figs 11.2, 13.30.**

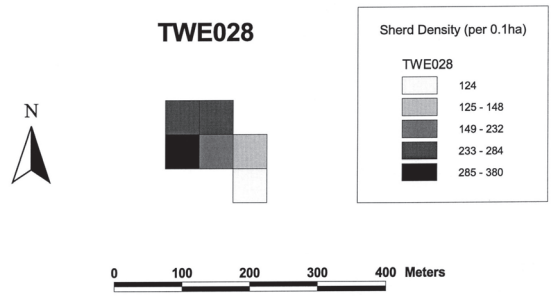


Figure 13.30. TWE 028, pottery density distribution in 50 x 50m grid survey area over core of settlement site (FP 1999).

Figure 13.31. TWE 035, lithics debitage on eroding scarp slope (FP 1998).

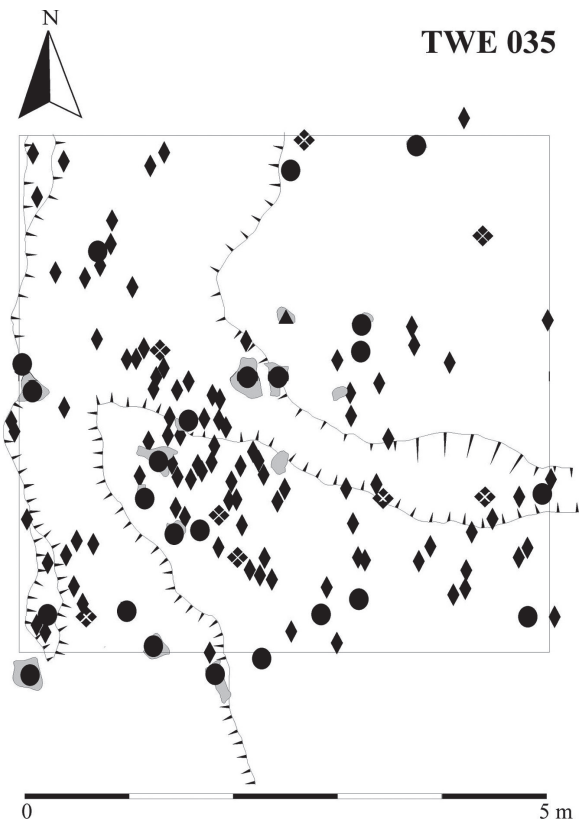


Figure 13.32. TWE 035, detailed plot of lithics scatter. For key, see GSC 053 (FP 1998).

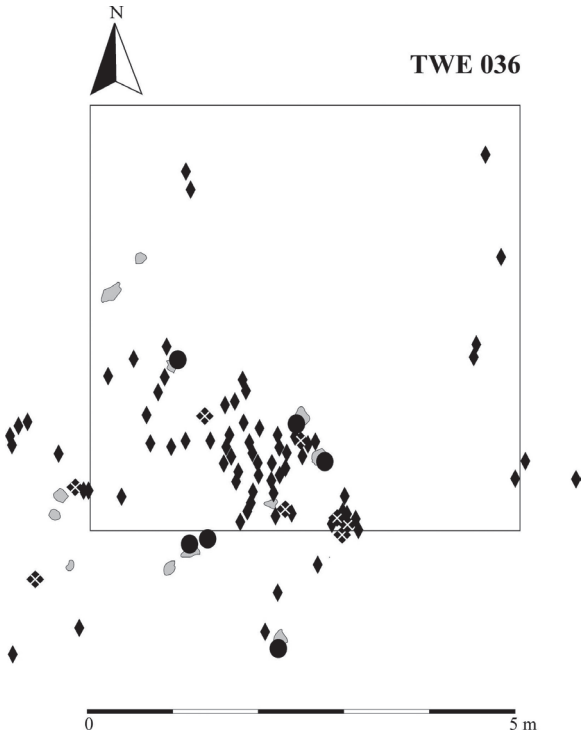


Figure 13.33. TWE 036, detailed plot of lithics scatter. For key, see GSC 053 (FP 1998).

TWE 029 Industrial site 26°33.12/13°05.47
An unusual large site situated in the middle of the extensive salt flat to the N of Tuwash. Heavily salt abraded Roman/Garamantian pottery is spread over several ha, notably on a number of low ridges and mounds that rise above the lower areas of the salt flat. There are numerous ashy patches on the mounds (e.g. 26°33.05/13°05.58, 26°33.04/13°05.64, 26°32.91/13°05.640), generally accompanied by hard crusts of non-metalliferous waste (probably to be associated with salt production or refining, see Section 43 below). There is a little evidence for iron smithing also, though this is not widespread (26°33.14/13°05.59 appears to be a large and well-preserved smithing hearth). Whilst no other structures were noted, the abundance of pottery and the numbers of industrial features suggest that this was a site of some size [1999, 2001]. CGAR
***Ills: AF 2*, Figs 11.2, 43.4.**

TWE 033 Rock art, inscription 26°32.23/13°06.63
Engravings of rhino, bovine and horse. Arabic graffiti. ***PAST, GAR, ISLAM-EMOD***

TWE 034 Rock art 26°32.60/13°06.78
An engraving of a bovine noted on a boulder in the top of the cliff at the W side of the hillfort TWE 021. A brief search failed to locate any further scenes. Some Pleistocene lithics in vicinity. [1998]. **PAST [PAL]**
***Ills: AF 2*, Fig. 42.1.**

TWE 035 Lithics scatter 26°32.06/13°06.47
Pleistocene lithics scatter, collected systematically. (=TWLS1). There was an abundance of débitage and some tools, but overall the site lacked integrity due to erosion on the steepish slope at the foot of the escarpment here (Mattingly *et al.* 2000a, 242). [1998]. **PAL**
***Ills: AF 2*, Figs 13.31-13.32.**

TWE 036 Lithics scatter 26°32.07/13°06.47
Pleistocene lithics scatter, immediately N of TWE 035, collected systematically. (=TWLS2). There was an abundance of débitage and some tools, but overall the site lacked integrity due to erosion on the escarpment slope (Mattingly *et al.* 2000a, 242). [1998]. **PAL**
***Ills: AF 2*, Fig. 13.33.**

TWE 038 Well 26°32.65/13°06.05
Abandoned well, cut through yellowish grey clay. Collapsed wooden A-frame superstructure and hollowed palm trunk still in place. Deep access cut and modern concrete revetment in lower part shows that it had been used in more recent past with motor pump (now removed). ***ISLAM-EMOD?***

TWE 039 Well 26°32.64/13°06.16
Large well, sub-rectangular plan, with a modern well drilled through the bottom of pit. Remains of the timber superstructure *in situ* on the E side (palm trunks secured in place with wire and a hollowed palm trunk channel). Deep cut to provide access to modern well installation on E side. Traces of a cut or channel on the S side. ***ISLAM-EMOD?***

TWE 041 Rock art 26°32.03/13°06.41
Rock art on an isolated boulder on the pediment below the escarpment. Several giraffes (*c.*1m high) and two other figures (possibly human?). Nearby is another boulder with a possible engraving of an elephant. [2001]. ***PAST***

TWE 042 Lithics scatter 26°35.61-36.14/ 13°06.88-08.53
This is the N shoreline of a large palaeolake known as the Jarma playa. This shoreline is at an altitude of 484.41m. The site consists of a semi-continuous line of duricrust outcrops located in an E-W direction. Lithics were collected at various points along this feature and are reported under this number. The collected lithics comprised a perforator, a denticulate and a bifacial foliate. It is possible that this site is Aterian in date. A specific collection at one location is reported under the separate site number, TWE 043. Melenoides shells were collected for dating, however, their stratigraphical context is uncertain. [1999]. **PAL**

TWE 043 Lithics scatter 26°35.89/13°06.48
A discrete scatter of lithics on the N edge of the ancient lake shoreline recorded under site TWE 042. The single

retrieved artefact from this site is an Aterian point confirming the Aterian presence around the lake suggested by TWE 042. [1999]. **PAL**
***Ills: AF 2*, Fig. 42.2.**

TWE 044 Antenna tomb 26°31.91/13°06.37
A large antenna tomb, noted by CMD in 1967 but not further investigated. The arms are respectively 27m+ long aligned 350° and 30m+ long aligned 110°. They are defined by parallel walls of edge-set small blocks *c.*1.2-1.5m apart, though most of these have now been knocked flat, apart from a few stretches of the SE aligned arm. The interior of the arms were filled with small stones laid flat. The feature at the apex of the two arms comprises a robbed burial at the centre of a low platform of laid blocks (*c.*8m diam.), probably originally with edge-set blocks delimiting it. There is a large flat stone immediately to the NE of the burial and a higher standing orthostat (*c.*30 cm high) just beyond it towards the exterior of the platform, perhaps a sighting stone on the cardinal alignment of the monument (40°). The central burial had been robbed prior to 1967 (leaving a hole *c.*1.70m diam. x 40cm deep), but examination in 2001 showed that many skeletal elements and some associated finds were still present in the spoil. The spoil heaps from the robbing were carefully sieved and 10 ostrich eggshell beads of Pastoral type (with large perforations) and some holocene lithics were recovered along with various elements of the skeleton. The highly fragmented bones can be identified as skeletal elements of an adult male with a lifestyle involving heavy physical demands. The mandible is very robust. There are roots from 2 incisors within the right portion, whilst the left PM2 was lost during life and the mandible shows alveolar resorbtion. The chin is well developed. All epiphyses present are fused and there is muscle marking on several fragments. There is degenerative joint disease present on several bones. (Mattingly *et al.* 2001, 141-42). Although no pottery was present, a bifacial foliate on fossil wood and other flakes and blades are suggestive of a mid-late Pastoral date for the tomb. [1967, 2001]. **M-LPAST**
***Ills: AF 2*, Fig. 13.34.**

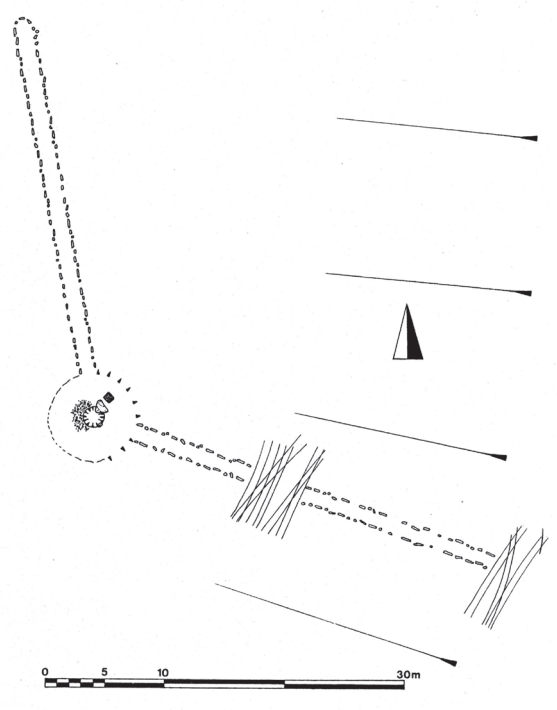


Figure 13.34. TWE 044, sketch plan of antenna tomb. The SE arm has been damaged by bulldozer action (FP 2001).

TWE 045 Cemetery 26°32.00/13°06.42
Scattered cairns. No further details. [1967]. **[CGAR]**

SECTION 14. AL-FUGĀR [FUGAR] (FUG)

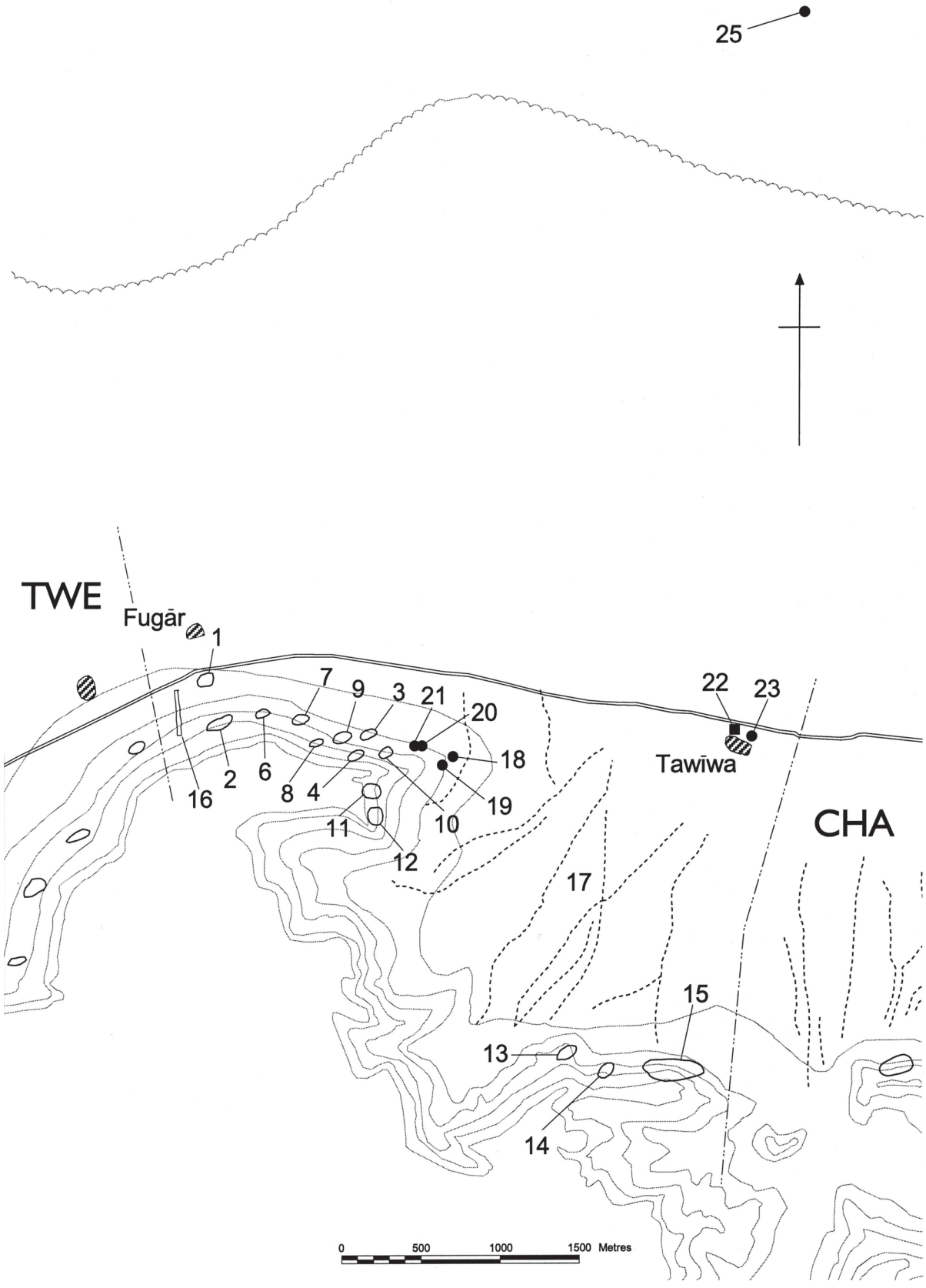


Figure 14.1. Map of sites in al-Fugār sector (CMD/FP).

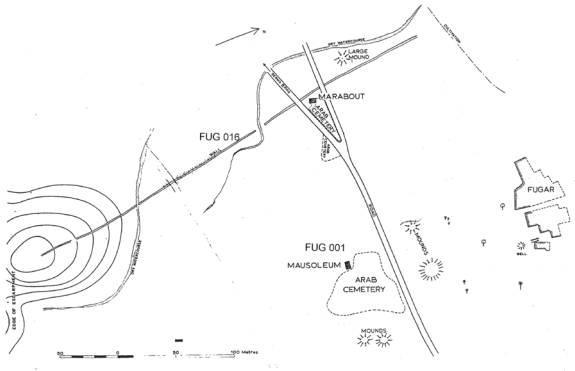


Figure 14.2. FUG 001, location plan of al-Fugār mausoleum, showing situation in 1960s (CMD 1965).

Figure 14.3. FUG 001, Fugār mausoleum under excavation, looking N (photo: CMD 1963).

Figure 14.4. FUG 001, Fugār mausoleum, looking SW (photo: CMD 1963).

The area has a minor settlement al-Fugār (Scarin 1937b, 624), directly N of FUG 001, and a substantial village with a *qasr* and mosque to the E at Tawīwa (Scarin 1937b, 624 – 177 inhabitants, 5,500 date palms). The survey area ran from the N end of the Fugār headland to E of Tawīwa. Survey work was limited to reconnaissance around the headland in 1965 and 1977. Barth provides a brief description of 'old' Tawīwa (Tewíwa) as it existed in 1850 (1857, 147), recording that it had been much damaged by floods and half-abandoned some nine years before his visit.

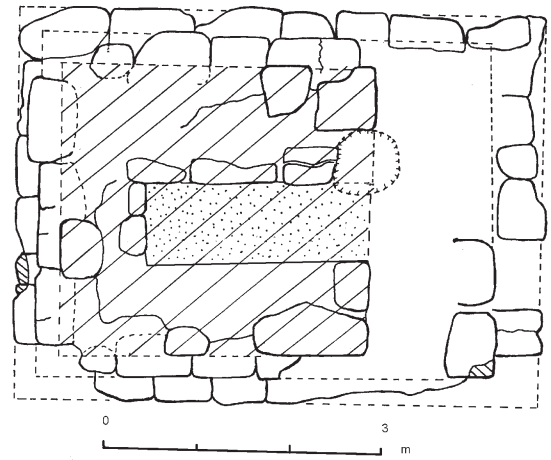


Figure 14.5. FUG 001, plan of 'mausoleum' base (CMD 1965).

Figure 14.6. FUG 001, cemetery and the sparse oasis of the mid-1960s (photo: CMD 1965).

Figure 14.7. FUG 001, engraved feet on a block of the mausoleum base (photo: CMD 1963).

The Fugār headland is a prominent topographic feature, creating a narrow *passage obligé* between the escarpment and the oasis, at a point in the valley where the sand on the N side of the valley also encroaches. The presence of a linear wall cutting across the line of the main E-W track along the Wādī al-Ajāl emphasises the topographic significance of the location – also hinted at in different ways by the presence of a cluster of rock art and marabout monuments on the headland. The rock art was initially reported on by Graziosi (1942, 141-43),

with a few sites noted by CMD, but more detailed follow up by FP (*AF 1*, 313-14).
***Ills: AF 1*, 245; *AF 2*, Figs 14.1-14.2, 14.6, 14.10.**

FUG 001 Mausoleum, cemetery, marabout tomb 26°33.90/13°07.86
Site identified by Caputo as 'necropoli di Brech' (Ibrayk) (Pace *et al.* 1951, 360-61), on the edge of a large Islamic cemetery, E of the marabout of Sīdī 'Alī Jed'bāh. The central feature of the site was excavated in December 1962, but no further work was possible within the cemetery. Although it is clear that the mausoleum must have sat within a Garamantian cemetery, the continued use of the area as a burial ground in more recent times has obliterated other ancient burials.

Excavation of the mausoleum by CMD revealed a platform measuring *c.*5.64 x 4.06m. The casing of sandstone blocks was exposed to foundation level and was heavily eroded. The main platform was constructed of two courses of faced blocks with a rubble core. Over this, at the W end of the platform was a superstructure *c.*3.15m square, preserved only at its foundation level, but probably akin to the tower-like cella of the UAT 001 structure. Within this was a narrow 'chamber' (*c.*2.5 x 0.8 m) with an entrance on its E side. The chamber was originally stone floored with paving blocks underlying the walls. Most of this had been robbed out, however, and only two fragments of the floor survived. This floor overlay a rubble and mud mortar fill. If this narrow chamber was used for the interment of a body, there would have only just been space for the normal flexed arrangement of the corpse. A sondage was excavated beneath the chamber floor to a depth of *c.*1m down to an apparently natural sandy surface but no trace of a burial chamber was found. Several loose blocks also carried incised Libyan graffiti, ground-out hollows, incised lines and 'feet'. [1962-3, 1965].
Addendum: Bulldozing c. 100m to W of mausoleum has recently revealed what appears to be a second mausoleum [2007].
PUGAR, CGAR, ISLAM, EMOD, *ISLAM-EMOD*
***Ills: AF 1*, 191; *AF 2*, Figs 14.2-14.7, 14.10.**

FUG 002 Cemetery 26°33.70/13°07.86
Type 2 dispersed cairn cemetery on lower escarpment slopes above FUG 001, as far as the headland. Noted and sketch planned during 1965. This included 10-15 large type 3 drum cairns amongst a more general spread of smaller type 1 mound cairns. Heavily robbed out for stone by 1977.
2.1: large circular structure *c.*4m across, with 'porch' formed of slab stele and orthostats *c.*1.2m wide on E side and a crude stone bowl/proto-table in front of it.
2.2: small mound cairn. [1965, 1977]. ***PUGAR***

FUG 003 Cemetery 26°33.80/13°08.40
Cemetery located in 1965. By 1977 the site was almost entirely destroyed to the extent that its exact location could not be definitely reidentified. In 1965, at least 20 substantial rectangular/square tombs noted, including some with stepped superstructures (types 4b/5b), as well as 10+ other type 1 mound cairns. Imported finewares include material of 3rd-4th century date.
3.1: square superstructure with much scattered small stone. **3.2**: large mound of rubble over outline of square tomb, heavily robbed. Small stone red painted 'horn stele'. **3.3**: Heavily robbed rectangular tomb with parts of N face still visible amongst rubble. **3.4**: rubble mound with possible corner of superstructure. **3.5**: robbed tomb with much of N face preserved and indications of two steps on superstructure. **3.6**: heavily robbed rectangular tomb with only parts of W face remaining. **3.7**: parts of subcircular superstructure surviving. **3.8**: robbed grave with small square cist; no superstructure. Parts of stele and small offering table. **3.9**: robbed rectangular superstructure, part preserved on E and N sides. **3.10**: large rubble mound, heavily robbed. **3.11**: large rubble mound covered with small stones, no faces visible. **3.12**: robbed rectangular superstructure with S face preserved. **3.13**: robbed cairn with stele. **3.14**: robbed rectangular superstructure with parts of S and E face preserved. **3.15**: rectangular superstructure, part preserved on W and N sides. **3.16**: tomb entirely robbed but red painted stele and small offering table (nine sockets and zig-zag decoration) remain. **3.17**: robbed rectangular superstructure with parts of N face and traces of a step preserved. **3.18**: robbed rectangular superstructure with parts of N, W and possibly S faces preserved. **3.19**: rectangular superstructure with parts of NW corner preserved. **3.20**: robbed rectangular superstructure with much of N, S and W faces preserved. [1965, 1977]. **CGAR, LGAR**

FUG 004 Cemetery 26°33.70/13°08.40
Medium-sized cemetery of cist cairns up slope (SE) of FUG 003. Identified in 1965. About 15+ graves at foot of spur, includes one rough stepped tomb. Pottery includes 4th century types. [1965]. **CGAR, LGAR**

FUG 005 Occupation? [not on map]
Identified 1965. Location not recorded. [1965, destroyed by 1977]. ***LPAST? GAR?***

FUG 006 Cemetery 26°33.80/13°08.04
Cemetery of 20-40 cairns, largely robbed out by April 1977. No pottery found. [1965, 1977]. ***LPAST? GAR?***

FUG 007 Cemetery 26°33.80/13°08.22
Dispersed cemetery of *c.*20-30 cairns, 1-2 gullies to E of FUG 006. No pottery found. [1977]. ***LPAST? GAR?***

FUG 008 Cemetery 26°33.70/13°08.28
Small group of up to 20 tombs in compact group to SE of FUG 007. Some stone robbing on N edge. Pottery noted. [1977]. ***GAR?***

FUG 009 Cemetery 26°33.70/13°08.34
Medium-sized cemetery of cists/cairns to W of FUG 003 across gully. [1977]. **CGAR**

FUG 010 Cemetery 26°33.70/13°08.52
Dispersed cemetery of cairns running to E end of Fugār headland. Perhaps the cemetery where Caputo excavated (Pace *et al.* 1951, 361-63). [1977]. **CGAR**

FUG 011 Cemetery 26°33.50/13°08.58
Group of *c.*20 cairns, some quite large, extending up to escarpment cliff face. All robbed. [1977]. ***LPAST? GAR?***

FUG 012 Cemetery 26°33.40/13°08.52
Dispersed groups of graves along escarpment slopes to S of FUG 011. [1977]. ***LPAST? GAR?***

FUG 013 Cemetery 26°32.80/13°09.06
Medium-sized cemetery around spur, in two main groups. Heavily robbed out for stone by 1977. Many graves are type 2c shaft burials with capstone slabs and coverings of small stones, but at least one type 3 drum cairn present. Some pottery evident. [1965, 1977]. ***GAR?***

FUG 014 Cemetery, rock art 26°32.70/13°09.24
Extensive dispersed cemetery along escarpment slopes, with apparent greater density along E (SE) end. One of several fallen large boulders along escarpment edge has rock drawing of an ox carved on its E face. [1977]. **CGAR *[PAST]***
***Ills: AF 2*, Fig. 14.8.**

FUG 015 Cemetery 26°32.60/13°09.48
Extensive and quite dispersed cemetery, with four better defined and more compact groups; quite heavily robbed by 1977. [1965, 1977]. ***LPAST? GAR?***

FUG 016 Wall 26°33.80/13°07.80
Low rubble stone bank/collapsed wall, *c.*1 m wide and 350-400 m long, running N from escarpment edge (referred to in CMD's notes as FUG 011). This wall may have served to control passage of travellers along the valley and is similar to another wall at the other significant narrow point at Takarkība (TEK 008) [1965, partly destroyed by 2000]. ***GAR?***
***Ills: AF 2*, Figs 14.2, 14.9-14.10.**

FUG 017 Foggara Group 26°33.40/13°09.00
Dispersed group of foggaras running SW-NE from E end of Fugār headland and escarpment edge to E, largely towards Tawīwa village area. Dendritic network of 7-8 major channels, spread over *c.*1.5km; the longest traceable over *c.*1.8km with a total of *c.*10km visible on AP coverage. ***GAR***
***Ills: AF 1*, 245.**

Figure 14.8. FUG 014, engraved bovine (photo: CMD 1977).

Figure 14.9. FUG 016, S-N wall controlling the E-W corridor between the escarpment foot at the al-Fugār promontory and the oasis (photo: CMD 1963).

Figure 14.10. FUG 016 wall, cemetery FUG 001 and the oasis (compare also Figs 14.2, 14.6) (photo: CMD 1965).

Figure 14.11. FUG 020, rock art on isolated boulder (photo: FP 2000).

Figure 14.12. FUG 022, collapsed mudbrick qasr *at Tawīwa (photo: FP 1998).*

Figure 14.13. FUG 022 and village of Tawīwa in 1960s (photo: CMD 1965).

FUG 018 Rock art, inscriptions **26°33.68/13°08.72**

The Fugār headland is rich in rock drawings, both around the bottom (as seen elsewhere) and further up slope (first noted by Graziozi 1942, 141-43). At the very NE tip of the promontory, at the base of the escarpment, there was a whole mass of Libyan inscriptions on bedrock and on isolated boulders. Also many incised lines and deep cup-marks up to 15cm diameter, and very stylised animals (cattle, goats?) that looked more recent.

The area also appears to represent a modern shrine (again linked with Sīdī ʻAlī) with numerous scraps of paper under stones with Arabic prayers etc written on them, and evidence of recent 'offerings', with broken bottles etc. Small boulders, some forming the ground surface, with Libyan inscriptions line the route around the base of the escarpment promontory, especially to the W. ***GAR-EMOD***

FUG 019 Rock art, marabout tomb **26°33.65/13°08.69**

Going up the E ridge of the escarpment, following one of a number of well-trodden paths, there are a series of natural terraces. The first two have cairn cemeteries on them, with the tomb of a holy man (Sīdī ʻAlī) on the second terrace. The third has a large palaeo-spring and several smaller ones. There is an area of rock art around the main spring with a series of engraved boulders with at least two giraffe and two abstract symbols. These were arranged at the point where the spring emerges, facing E down into the Wādī.

Another 50m or so up the ridge, there is another spring area with scattered boulders around. Here there is a single pecked image of a male bovid (with penis). The top of the escarpment is difficult of access here and has not yet been investigated. ***PAST [ISLAM-EMOD]***
***Ills: AF 1*, 313**

FUG 020 Rock art **26°33.72/13°08.62**

Going W around the base of the escarpment promontory there are a series of tumbled boulders by palaeo-spring or stream channels. In old stream bed, a large boulder has its upslope face decorated with a series of antelope (+ a dog?), in eroded, incised lines. There are also a series of eroded, pecked images (?bovid?). ***PAST***
***Ills: AF 2*, Fig. 14.11.**

FUG 021 Rock art, inscriptions **26°33.72/13°08.59**

Large boulder near the base of the escarpment in the middle of an old stream bed, close to two cairns. The W face is decorated with a herd of humpless longhorn cattle, all facing left. All are pecked, with reddish patina and all have pronounced penises. At least 10 separate animals, possibly more although now eroded. About 50m downstream there is another large boulder in a stream bed with several Libyan inscriptions. Another single engraved bovine also noted close to the latter. ***PAST, GAR-EMOD***

FUG 022 *Qasr*, settlement **26°33.80/13°09.76**

Qaṣr Tawīwa and an associated unenclosed village in several separate zones (the latter occupied until recent times, Scarin 1934, 88). The *qasr* is a *c.*20m square mudbrick castle, with massively thick outer walls standing up to 10m high. The inside is full of collapsed mudbrick, though traces of interior room divisions are visible at the upper level. The type of mudbrick employed here is identical to the salt-hardened variety used for the construction of the walls of Old Jarma and the *kasba* within the latter site (GER 001.009, 001.065), and

Figure 14.14. FUG 023, mosque and zawiya compolex at Tawīwa, view from top of qasr*, looking E (photo: FP 1998).*

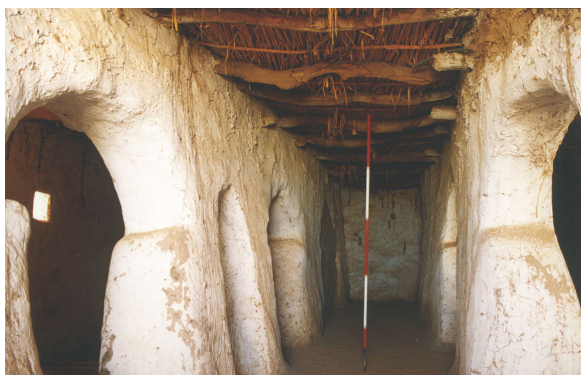


Figure 14.15. FUG 023, interior arcades of mosque prayer hall (photo: FP 1998).

presumably dates to a similar period (broadly 15th-16th centuries AD). On Scarin's (1934, 88) sketch plan, there is a line demarcating an old exterior wall, which must relate to a phase of the site, before its dispersed and unenclosed early modern state. Mosque FUG 023 lies just to the E of the *qasr*. ***ISLAM-EMOD***
***Ills: AF 2*, Figs 14.12-14.13.**

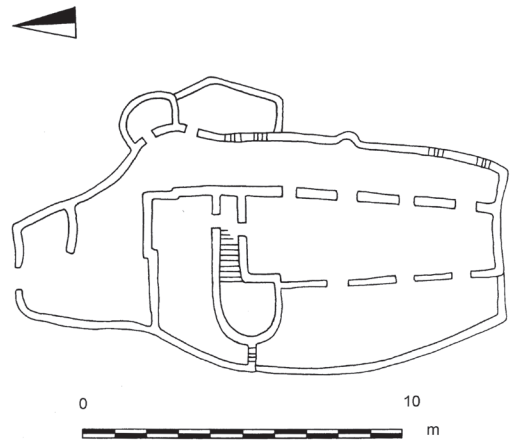


Figure 14.16. FUG 023, plan of Tawīwa mosque (FP 1998, after Scarin 1934).

FUG 023 Mosque 26°33.80/13°09.80
The well-preserved mosque and associated buildings at Tawīwa were planned by Scarin in the 1930s and photo-recorded by FP in 1998. The mosque is a fine example of the smaller Saharan type, with a roughly circular minaret on the N side of the prayer hall. The mushroom-topped arches and windows within the prayer hall are characteristic. The mosque sits at the heart of a complex of buildings, which probably formed a *zawiya* (Scarin 1934, 98-100). [1998]. ***ISLAM-EMOD***
***Ills: AF 1*, 174, 183-85; *AF 2*, Figs 14.13-14.16.**

FUG 025 Lithics scatter 26°36.20/13°09.90
A scatter of holocene lithics including a polished stone axe, along the top of the sand plinth on the S edge of the sand sea, where the Mandara track emerges from the sand. The site is probably Middle/Late Pastoral in date. [1999]. **M-LPAST**

SECTION 15. AL-KHARA'IQ [EL-CHARAIG] (CHA)

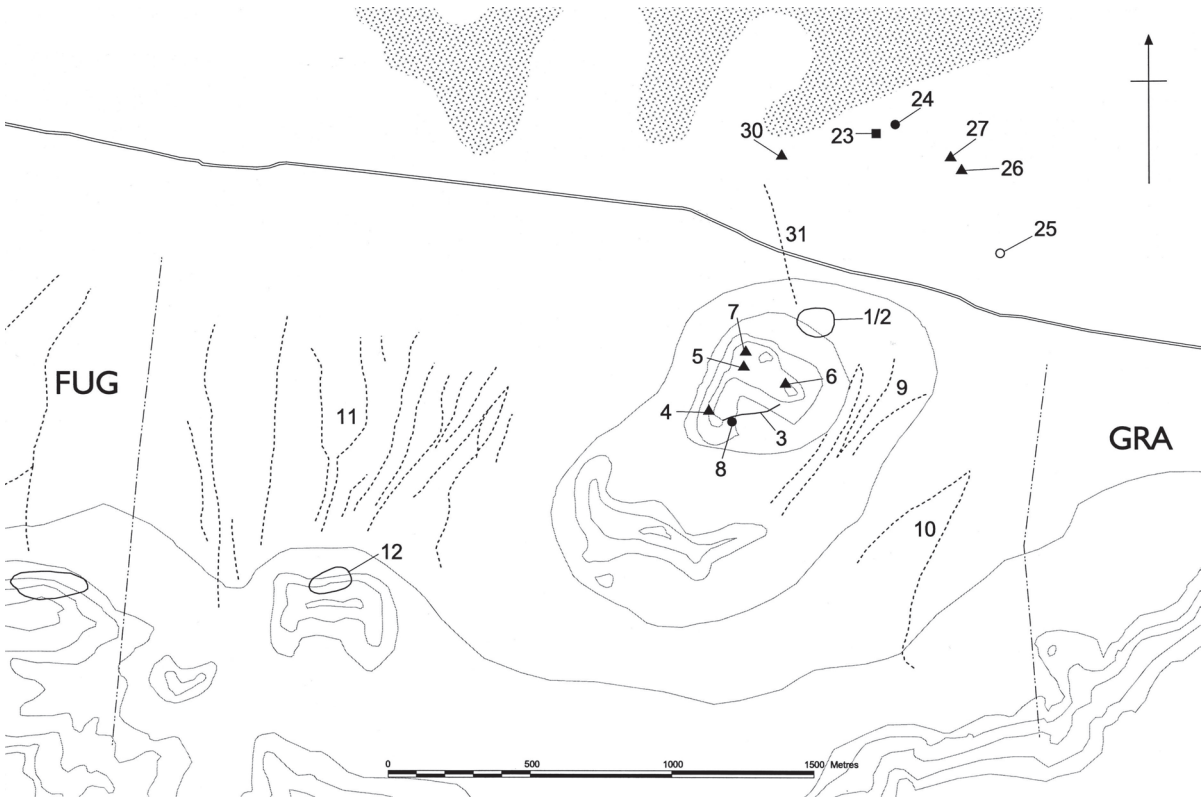


Figure 15.1. Map of sites in al-Khara'iq sector (CMD/FP).

To the E of the Fugār headland, the Wādī swiftly narrows, being almost closed off at Takarkība. There is no major early modern village in this sector (Scarin 1937b, 624). The narrowing Wādī here has a prominent isolated hill c.1km E of the small hamlet of al-Khara'iq/ Kharaiq, commonly referred to in the older literature as Charaig. The area is best known for the presence of a large cemetery of mudbrick 'pyramids', explored by Caputo in the 1930s (Pace *et al.* 1951, 363-73). The al-Khara'iq cemetery was examined by CMD in 1959 and 1965, while further reconnaissance in this area in 1971 explored the hilltop to the S of the site, which was surveyed in some detail in 1973. A full survey of the cemetery CHA 001-002 site was made by FP in 1999. ***Ills: AF 1*, 245; *AF 2*, Figs 15.1, 15.7-15.8.**

CHA 001 Cemetery (pyramid) 26°33.42/13°11.60

A large Type 7 pyramid cemetery, locally known in 1959 as Qaṣr Rūm ('Gasr Roum'). Caputo excavated several burials here in the 1930s and published a schematic plan of a part of the site (Pace *et al.* 1951, 363-73). CMD first visited the cemetery in 1959 and did further recording here in 1965, but the cemetery was not fully planned until 1999. CMD distinguished between the pyramids as site CHA 001 and the cluster of circular tombs on the S fringes of the former, which he labelled CHA 002. The reality may have been more complex and we have chosen to combine the detailed description under this entry, with a shorter comment under CHA 002. In broad terms the cemetery falls into four main zones:

a) a flattish area on the N side where most of the pyramids are concentrated;
b) an area where type 4b square and type 3b circular tombs are interspersed with the pyramids on the S side of a);
c) an area of close-packed circular tombs of large diameter on the slopes to the W of a) and b);
d) an area of smaller circular tombs to the S of a) and b).

The site has been frequently visited and although many tombs have clearly been broken open, sherds are relatively sparse on the surface. The majority of the pottery collected by CMD suggested a date between the 1st and 3rd century AD, but discovery of an earlier cache of collected sherds under sand near the N end of the cemetery revealed a significant volume of 4th-5th century material, as well as some handmade wares similar to the early pottery from Zinkekrā. There is also a thin scatter of residual Pleistocene lithics.

The 1999 survey, using a total station, revealed a total of 285 tombs, which were recorded in plan (to save time elevation detail was not recorded – though *c.*1000 survey readings were still required). In addition, information regarding the type of tomb, preservation (on a scale 1-5, where 5 is best preserved) and the approximate

height of survival (to the nearest 25cm) was recorded. The tombs divide by type as follows: mudbrick pyramid tombs 155, circular stone built tombs 115, square or rectangular stone tombs 12, tombs of uncertain type 2. This is thus the largest pyramid cemetery known in the Wādī – compare ELH 002 with *c.*90 pyramids. As with the al-Ḥaṭīya examples, the burials appear to have been placed in shafts below the tomb, some stone-lined, others cut into the natural. Robbing has commonly involved digging into the base of the structure from the E side (on the W side of the cemetery also from the W). All the well-preserved examples appear to correspond to the type 1 pyramid, where the structure originally sloped in from ground upwards The pyramid tombs differ from those at al-Ḥaṭīya in that they appear not to have been solid mud-brick right through, but to have been built around an armature of stone blocks, piled up over the slabs sealing the shaft. The reason for this difference concerns the location of the cemeteries, with the al-Ḥaṭīya examples being at some distance from the nearest rock exposure, whilst al-Kharaʿiq is constructed on a boulder-strewn slope, with abundant blocks ready to hand. The construction of the 'armature' reduced the required quantity of manufactured mud-bricks. Most of the pyramids are of similar size, typical dimensions being 1.5-3m square at the base by 1.5-2m high (the tallest reconstructed height would be 3m at most). The yellowish brown mudbricks (*c.*25-30cm x *c.*10cm) were bonded with brown clay.

There are a number of fragments of stele on the site, but neither CMD nor the FP team noted any offering tables. The pattern of robbing of the tombs suggests that something originally stood on the E side of many tombs (apart from at the W fringes of the burial ground, where they may have been placed on the W side) and it was from this side that robbing was commenced. However, the majority of the fragments of hands were noted in or close to circular tombs. Some of the smaller circular tombs (mainly of drum cairn or mound cairn type) may be earlier, especially those congregating higher up the slope on the S side of the cemetery. However, other examples of the stone-footed circular and square/rectangular tombs are interspersed with the pyramids and look like later infilling, though sequencing of tombs is difficult, because of the demolition and robbing that has gone on. The stele (including type 3 examples) appear most often to be associated with large circular tombs of 3-4m diameter.

1.1: pyramid, H:1m (pres.3); **1.2**: pyramid, H:1m (pres.3); **1.3**: circular tomb, - (pres.1); **1.4**: rectangular tomb, - (pres.1); **1.5**: pyramid, H:75cm (pres.2); **1.6**: pyramid, H:50cm (pres.2); **1.7**: pyramid, H:2m (pres.2); **1.8**: pyramid, H:1m (pres.3); **1.9**: pyramid, H:2m (pres. 5); **1.10**: pyramid, H:50cm (pres.2); **1.11**: pyramid, H:25cm (pres.1); **1.12**: pyramid, H:25cm (pres.1); **1.13**: pyramid, H:25cm (pres.1); **1.14**: pyramid, H:1m (pres.3); **1.15**: pyramid, H:1.5m (pres. 4); **1.16**: pyramid, H:1m (pres.3), partial destruction by water channel; **1.17**: circular tomb, - (pres.1); **1.18**: circular tomb, - (pres.1),

Figure 15.2. CHA 001/002, general view of cemetery, looking N (photo: FP 1999).

Figure 15.3. CHA 001, typical mudbrick pyramid in good state of preservation (photo: FP 1999).

Figure 15.4. CHA 001, typical robbed state of al-Kharaʿiq pyramid (photo: FP 1999).

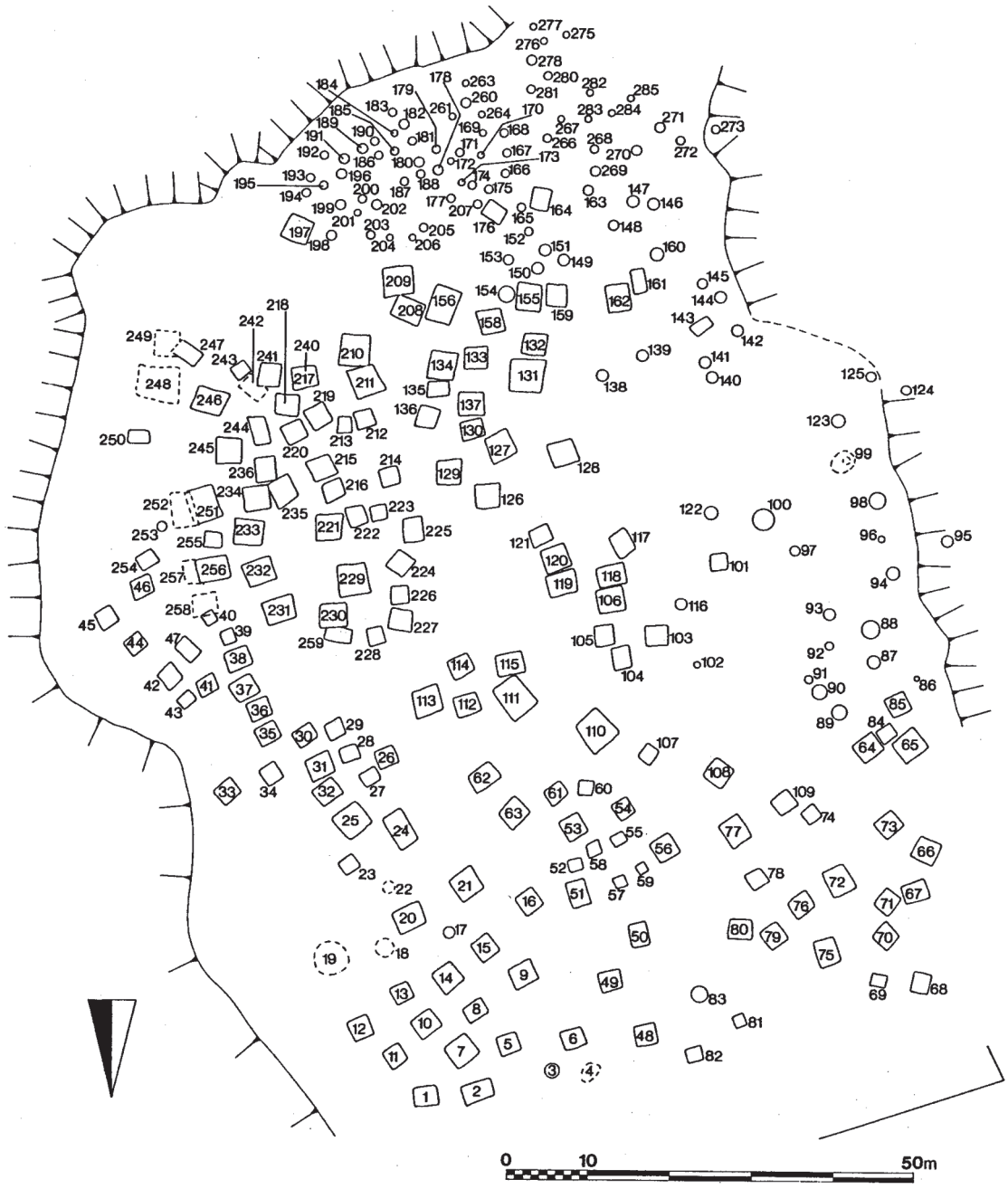


Figure 15.5. Survey of CHA 001/002 cemetery (FP 1999).

Depression; **1.19**: circular tomb, - (pres.1), with a raised area; **1.20**: pyramid, H:1m (pres.3); **1.21**: pyramid, H:50cm (pres.2), excavated/robbed chamber; **1.22**: circular tomb, - (pres.1), Raised area; **1.23**: pyramid, - (pres.1), excavated/robbed chamber. **1.24**: pyramid, H:1m (pres.2), excavated/robbed; **1.25**: pyramid, H:50cm (pres.2), excavated/robbed; **1.26** pyramid, H:75cm (pres.2); **1.27**: pyramid, - (pres.1), excavated/robbed; **1.28**: pyramid, H:50cm (pres.3); **1.29**: pyramid, H:75cm (pres.3); **1.30**: pyramid, H:1.5m (pres.5); **1.31**: pyramid, H:1.5m (pres.5); **1.32**: pyramid, H:50cm (pres.2), excavated/robbed; **1.33**: pyramid, - (pres.1); **1.34**: pyramid, H:50cm (pres.1); **1.35**: pyramid, H:50cm (pres.2), excavated/robbed; **1.36**: pyramid, H:1m (pres. 4), excavated/robbed; **1.37**: pyramid, H:50cm (pres.2), excavated/robbed; **1.38**: pyramid, H:50cm (pres.2); **1.39**: pyramid, H:50cm (pres.1); **1.40**: pyramid, H:25cm (pres.1); **1.41**: pyramid, H:50cm (pres.2); **1.42**: pyramid, H:50cm (pres.2); **1.43**: pyramid tomb, - (pres.1); **1.44**: pyramid, H:2m (pres. 4), excavated/robbed; **1.45**: pyramid, H:50cm (pres.2); **1.46**: pyramid, H:75cm (pres.3); **1.47**: pyramid, H:23cm (pres.1), excavated/robbed; **1.48**: pyramid, H:25cm (pres.1); **1.49**: pyramid, H:50cm (pres.2), excavated/robbed; **1.50**: pyramid, H:25cm (pres.2), excavated/robbed; **1.51**: pyramid, H:1m (pres.3), excavated/robbed; **1.52**: pyramid, H:50cm

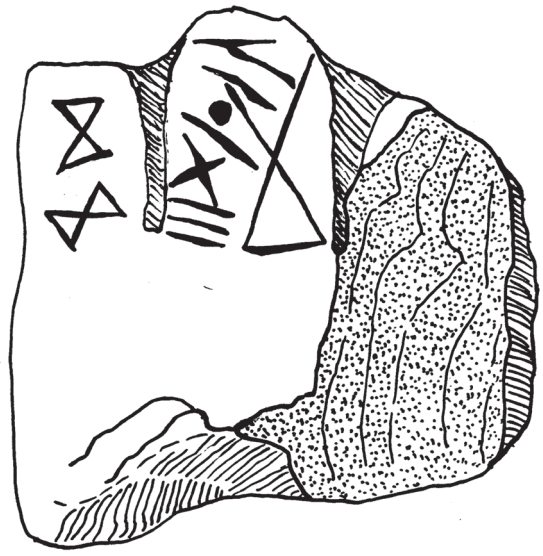


Figure 15.6. CHA 001-002, fragmentary type 3 stele, with Libyan inscription or graffiti (CMD 1973).

(pres.2); **1.53**: pyramid, H:2m (pres. 4); **1.54**: pyramid, - (pres.1); **1.55**: pyramid, - (pres.1); **1.56**: pyramid, H:2m (pres. 4); **1.57**: pyramid, H:50cm (pres.2); **1.58**: pyramid, - (pres.1); **1.59**: pyramid, - (pres.1); **1.60**: pyramid, - (pres.1); **1.61**: pyramid, - (pres.1); **1.62**: pyramid, H:25cm (pres.2); **1.63**: pyramid, H:1m (pres. 4); **1.64**: pyramid, H:1.5m (pres. 4); **1.65**: pyramid, H:1.5m (pres. 4); **1.66**: pyramid, - (pres.1); **1.67**: pyramid, - (pres.1); **1.68**: pyramid, - (pres.1); **1.69**: pyramid, - (pres.1); **1.70**: pyramid, - (pres.1), excavated/robbed; **1.71**: uncertain type, - (pres.1); **1.72**: pyramid, H:1m (pres.3); **1.73**: uncertain type, - (pres.1), boulders at each corner; **1.74**: pyramid, - (pres.1); **1.75**: pyramid, - (pres.1); **1.76**: pyramid, H:1.5m (pres. 4); **1.77**: pyramid, H:1.5m (pres. 4); **1.78**: pyramid, - (pres.1); **1.79**: pyramid, H:25cm (pres.2); **1.80**: pyramid, H:25cm (pres.1); **1.81**: pyramid, - (pres.1); **1.82**: pyramid, H:25cm (pres.1); **1.83**: circular tomb, - (pres.1); **1.84**: circular tomb, - (pres.1); **1.85**: circular tomb, - (pres.1); **1.86**: circular tomb, - (pres.1); **1.87**: circular tomb, - (pres.1); **1.88**: circular tomb, - (pres.1); **1.89:** circular tomb, - (pres.1); **1.90**: circular tomb, - (pres.1); **1.91**: circular tomb?,- (pres.1); **1.92**: circular tomb, - (pres.1); **1.93**: circular tomb, - (pres.1); **1.94**: circular tomb, - (pres.1); **1.95**: circular tomb, - (pres.1); **1.96**: circular tomb, - (pres.1); **1.97**: circular tomb, - (pres.1); **1.98**: circular tomb, - (pres.1); **1.99**: circular tomb, - (pres.2), lithic core; **1.100**: circular tomb, - (pres.1); **1.101**: square stone tomb, - (pres.1); **1.102**: circular tomb, - (pres.2); **1.103**: pyramid, H:1.5m (pres.4), excavated/robbed, scraper; **1.104**: pyramid, H:1.5m (pres. 4); **1.105**: pyramid, H:1.5m (pres. 4); **1.106**: pyramid, H:1.5m (pres. 4), possible handaxe; **1.107**: pyramid, - (pres.1), not standing above ground; **1.108**: pyramid, - (pres.1), not standing above ground; **1.109**: pyramid, - (pres.1), not standing above ground; **1.110**: pyramid, - (pres.1), not standing above ground; **1.111**: pyramid, - (pres.1); **1.112**: pyramid, H:50cm (pres.2); **1.113**: pyramid, H:1m (pres.3); **1.114**: pyramid, H:1.5m (pres. 4); **1.115**: pyramid, - (pres.1), not standing above ground; **1.116**: circular tomb, - (pres.1); **1.117**: pyramid, - (pres.1); **1.118**: pyramid, - (pres.1); **1.119**: pyramid, - (pres.1); **1.120**: pyramid, H:1.5m (pres.3); **1.121**: pyramid, H:1.5m (pres.3), blade; **1.122**: circular tomb, - (pres.1); **1.123**: circular tomb, - (pres.1), tool / core; **1.124**: circular tomb, - (pres.1); **1.125**: circular tomb, - (pres.1); **1.126**: pyramid, H:2m (pres.4); **1.127**: pyramid, - (pres.2), boulders used to form burial chamber; **1.128**: pyramid, H:1.25m (pres.3), stone tool; **1.129**: pyramid, H:1.5m (pres.4), boulder chamber, excavated/robbed; **1.130**: pyramid, H:1.25m (pres.3); **1.131**: pyramid, H:1m (pres.2), large boulders; **1.132**: pyramid, H:75cm (pres.3), blade; **1.133**: pyramid, H:1m (pres.3), excavated/robbed; **1.134**: pyramid, H:1.50m (pres.3), excavated/robbed, scraper; **1.135**: pyramid, H:50cm (pres.2); **1.136**: pyramid, - (pres.1), barely visible above ground; **1.137**: pyramid, - (pres.1), finger of hand stele *in situ*, with possible Libyan graffiti; **1.138**: circular tomb, - (pres.1), stone tool; **1.139**: circular tomb, - (pres.1), stone tool; **1.140**: circular tomb, - (pres.1); **1.141**: circular tomb, - (pres.1); **1.142**: circular tomb, - (pres.1), stone tool; **1.143** rectangular tomb, - (pres.1), African Red Slip; **1.144**: circular tomb, - (pres.1); **1.145**: circular tomb, - (pres.1); **1.146**: circular tomb, - (pres.1), dressed stone block; **1.147**: circular tomb, - (pres.1), stone tools; **1.148**: circular tomb, - (pres.1); **1.149**: circular tomb, - (pres.1), amphora sherds; **1.150**: circular tomb, - (pres.1); **1.151**: circular tomb, - (pres.1); **1.152**: circular tomb, - (pres.1); **1.153**: circular tomb, - (pres.1); **1.154**: circular tomb, - (pres.1); **1.155**: pyramid, - (pres.1), hand stele fragment; **1.156**: pyramid, - (pres.1), ARS sherds; **1.157**: pyramid, - (pres.1), dressed stone architectural fragment; **1.158**: pyramid, - (pres.1); **1.159**: pyramid, - (pres.1); **1.160**: pyramid, - (pres.1), pottery; **1.161**: pyramid, - (pres.1), pottery; **1.162**: pyramid, - (pres.1); **1.163**: circular tomb, - (pres.1); **1.164**: pyramid, - (pres.1), dressed stone; **1.165**: circular tomb, - (pres.1); **1.166**: circular tomb, - (pres.1); **1.167**: circular tomb, - (pres.1), blade; **1.168**: circular tomb, - (pres.1); **1.169**: circular tomb, - (pres.1), African Red Slip, excavated/robbed; **1.170**: circular tomb, - (pres.1); **1.171**: circular tomb, - (pres.1); **1.172**: circular tomb, - (pres.1); **1.173**: circular tomb, - (pres.1); **1.174**: circular tomb, - (pres.1); **1.175**: circular tomb, - (pres.1), pottery; **1.176**: pyramid?- (pres.1), stone lined; **1.177**: circular tomb, - (pres.1), pottery; **1.178**: circular tomb, - (pres.1); **1.179**: circular tomb, - (pres.1), pottery, African Red Slip; **1.180**: circular tomb, - (pres.1); **1.181**: circular tomb, - (pres.1); **1.182**: circular tomb, - (pres.1); **1.183**: circular tomb, - (pres.1); **1.184**: circular tomb, - (pres.1); **1.185**: circular tomb, - (pres.1); **1.186**: circular tomb, - (pres.1); **1.187**: circular tomb, - (pres.1), excavated/robbed; **1.188**: circular tomb, - (pres.1); **1.189**: circular tomb, - (pres.1); **1.190**: circular tomb, - (pres.1); **1.191**: circular tomb, - (pres.1); **1.192**: circular tomb, - (pres.1);

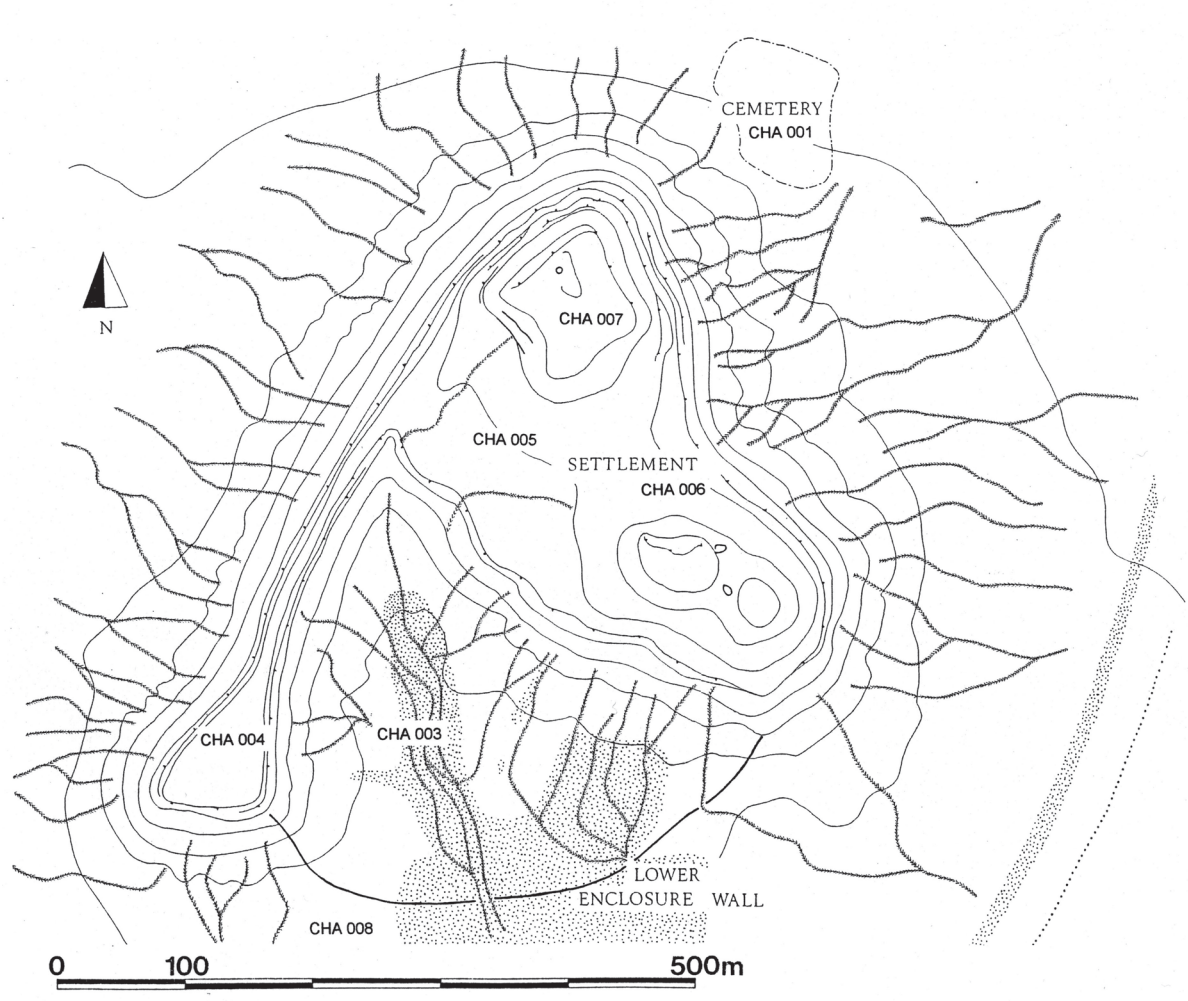


Figure 15.7. CHA 001-008, showing relation of main cemetery and settlement components on and around the al-Khara'iq hill (CMD/FP).

1.193: circular tomb, - (pres.1); **1.194**: circular tomb, - (pres.1); **1.195**: circular tomb, - (pres.1); **1.196**: circular tomb, - (pres.1); **1.197**: circular tomb, - (pres.1); **1.198**: circular tomb, - (pres.1); **1.199**: circular tomb, - (pres.1); **1.200**: circular tomb, - (pres.1); **1.201**: circular tomb, - (pres.1); **1.202**: circular tomb, - (pres.1); **1.203**: circular tomb, - (pres.1), excavated/robbed; **1.204**: circular tomb, - (pres.1); **1.205**: circular tomb, - (pres.1); **1.206**: circular tomb, - (pres.1); **1.207**: circular tomb, - (pres.1), stone lined; **1.208**: pyramid, - (pres.1), hand stele fragment, stone lined; **1.209**: pyramid, - (pres.1), partially buried by hill-wash; **1.210**: pyramid, - (pres.1), stone lined; **1.211**: pyramid, H:1m (pres.3); **1.212**: pyramid, H:50cm (pres.2); **1.213**: pyramid, H:50cm (pres.2); **1.214**: pyramid, H:25cm (pres.1), excavated/robbed; **1.215**: pyramid, H:1.25m (pres.3); **1.216**: pyramid, H:75cm (pres.2); **1.217**: pyramid, H:1.25m (pres.3); **1.218**: pyramid, - (pres.1), stone lined; **1.219**: pyramid, - (pres.1); **1.220**: pyramid, H:25cm (pres.1); **1.221**: pyramid, H:25cm (pres.2); **1.222**: pyramid, - (pres.1), stone footing; **1.223**: pyramid, - (pres.1); **1.224**: pyramid, - (pres.1); **1.225**: pyramid, - (pres.1); **1.226**: pyramid, - (pres.1), stone footing; **1.227**: pyramid, H:50cm (pres.2); **1.228**: pyramid, - (pres.1); **1.229**: pyramid, - (pres.1), stone footing; **1.230**: pyramid, - (pres.1); **1.231**: pyramid, H:1.5m (pres.3), excavated/robbed; **1.232**: pyramid, H:1.5m (pres.3); **1.233**: pyramid, - (pres.1), excavated/robbed; **1.234**: pyramid, - (pres.1); **1.235**: rectangular stone tomb, - (pres.1); **1.236**: rectangular stone tomb, - (pres.2); **1.237**: pyramid, - (pres.2), hand stele fragment; **1.238**: rectangular stone tomb, - (pres.2), worked stone fragment (x 2); **1.239**: pyramid, - (pres.2); **1.240**: pyramid, H:1.5m (pres.3), hand stele fragment; **1.241**: pyramid, H:1m (pres.3); **1.242**: pyramid, H:25cm (pres.1), possibly abutted by Tomb 1.243; **1.243**: pyramid, - (pres.1); **1.244**: pyramid, H:1m (pres.2); **1.245**: pyramid, - (pres.1), excavated/robbed, dressed stone block, depth 2.00 m; **1.246**: pyramid, - (pres.2), excavated/robbed, dressed stone block; **1.247** square stone tomb, - (pres.1); **1.248**: square stone tomb, - (pres.3); **1.249**: square stone tomb, - (pres.1); **1.250**: pyramid, - (pres.1); **1.251**: pyramid, H:2m (pres.4), worked stone;

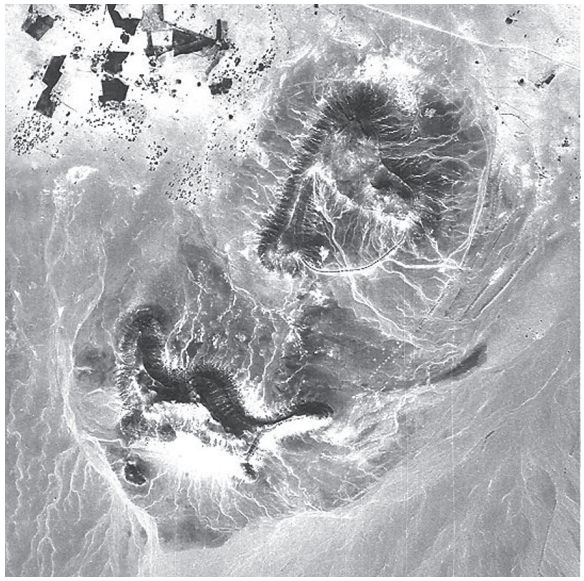


Figure 15.8. Air-photo of al-Khara'iq hill.

Figure 15.9. CHA 003, enclosure wall around possible area of lower settlement on S side of al-Khara'iq hill (CMD 1973).

1.252: pyramid, - (pres.3), possibly cuts Tomb 1.251; **1.253**: circular tomb, - (pres.2); **1.254**: pyramid, - (pres.1); **1.255**: pyramid, - (pres.1); **1.256** : square stone tomb, - (pres.1); **1.257**: square stone tomb, - (pres.1), possibly cuts Tomb 1.256; **1.258** : square stone tomb, - (pres.1); **1.259**: pyramid, - (pres.1); **1.260**: circular tomb, - (pres.1), excavated/robbed; **1.261**: circular tomb, - (pres.1), excavated/robbed; **1.262**: circular tomb, - (pres.1), excavated/robbed; **1.263**: circular tomb, - (pres.1); **1.264**: circular tomb, - (pres.1); **1.265**: circular tomb, - (pres.1); **1.266**: circular tomb, - (pres.1); **1.267**: circular tomb, - (pres.1); **1.268**: circular tomb, - (pres.1); **1.269**: circular tomb, - (pres.1); **1.270**: circular tomb, - (pres.1); **1.271**: circular tomb, - (pres.1); **1.272**: circular tomb, - (pres.1), lined by boulders; **1.273**: circular tomb, - (pres.1), lined by boulders; **1.274**: circular tomb, - (pres.1); **1.275**: circular tomb, - (pres.1); **1.276**: circular tomb, - (pres.1); **1.277**: circular tomb, - (pres.1); **1.278**: circular tomb, - (pres.1); **1.279**: circular tomb, - (pres.1); **1.280**: circular tomb, - (pres.1); **1.281**: circular tomb, - (pres.1), hand/stele fragment; **1.282**: circular tomb, - (pres.1), hand/stele fragment; **1.283**: circular tomb, - (pres.1); **1.284**: circular tomb, - (pres.1); **1.285**: circular tomb, - (pres.1). [1959, 1962, 1965, 1973, 2000]. **[PAL, EGAR], PUGAR, CGAR, LGAR**
***Ills: AF 1*, 192-93, 196, 321; *AF 2*, Figs 15.1-15.7.**

CHA 002 Cemetery, inscription **26°33.40/13°11.58**

Cemetery to S of main 'pyramid' cemetery. Graves without mudbrick superstructures, probably mainly small cairns over stone cists, but now heavily robbed. Fragments of stele were found among tombs but no offering tables. One hand fragment (H1) had part of an incised Libyan graffiti. [1959, 1962, 1965, 1973, 2000]. **CGAR, *GAR***
***Ills: AF 2*, Figs 15.2, 15.5-15.6.**

CHA 003 Enclosure **26°33.10/13°11.40**

Large enclosure on the S side of al-Khara'iq hill, invisible from Wādī centre to N. Enclosure consists of a mound or bank *c.*5m wide and 3m high, built mostly of clay, possibly including decayed mudbrick with some repairs in stone. Little was found within the area encircled, neither substantial remains of occupation, nor traces of rock carvings on the steep sides of the rock. Suggested to be an animal pen of considerable size and sheltered location.

Four small test-pits were excavated within the enclosure. Two small pits A and B were excavated within some shallow depressions of smaller, less weathered stone on the hillside. Pit A revealed no archaeological material while Pit B revealed traces of ash and occupation debris (e.g. date stones), but no dating evidence. Pit 3 was cut in an area just N of the enclosure wall where several surface sherds had been found. This revealed no subsurface material. Pit D was taken across the remains of the destroyed enclosure wall to examine the foundations. During excavation, a burial was found just S of the wall, apparently cut by it. ***GAR***
***Ills: AF 2*, Figs 15.7-15.9.**

CHA 004-007 Escarpment Settlement **26°33.20/13°11.28**

CHA 004. A few signs of occupation were found on the SW spur of the hilltop. At the narrow part of the spur, a small structure was noted. No finds associated with it except a fragment of a small lid and piece of worked stone.
CHA 005. Settlement area on the southern slopes of the W peak of the hilltop, marked by a series of small platforms/terraces and low stone structures. A preliminary survey of the hilltop and test excavations were carried out during April 1973. The results indicate the presence of settlement here during many periods with lithic scatters, Garamantian material of late first millennium BC-first millennium AD as well as post-medieval and potentially quite recent occupation in places. The remains of settlement were generally very ephemeral with very little surviving stratigraphy. Limited survey of the hilltop in

Figure 15.10. CHA 005, structures of the W part of the escarpment settlement (photo: FP 1998).

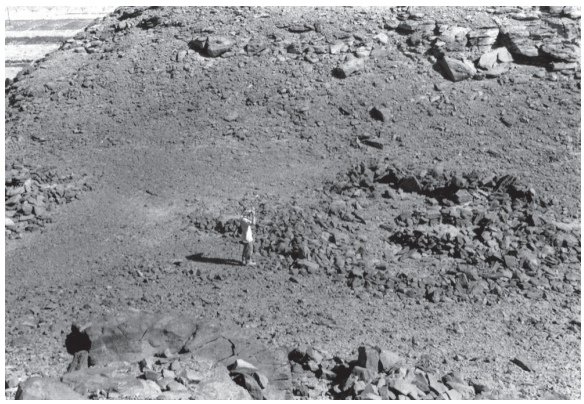


Figure 15.11. CHA 006, structures of the E part of the escarpment settlement (photo: FP 1998).

1998 recovered further handmade wares with impressed decoration and Roman pottery of the 1st-2nd centuries AD. [1973, 1998]

CHA 006. A second settlement area was defined on the W slopes of the E peak of the hilltop, divided from CHA 005 by the gully/wash across the coll. This included several subcircular platforms and low stone walls. Some structures referred to by CMD as 'Tuareg' huts may be of relatively recent date. [1973]

CHA 007. Further occupation with the remains of some stone structures was noted in the area of the N peak, with elements of what may have been an enclosure wall and other structures running down the slope towards CHA 005. [1973, 1998]. **EGAR, PUGAR, CGAR**
***Ills: AF 1*, 141; *AF 2*, Figs 15.7-15.8, 15.10-15.11.**

CHA 008 Occupation, cemetery? 26°33.10/13°11.40
Outside the enclosure wall CHA 003 a small trial excavation [(8)1] produced unstratified finds from vicinity of western break in wall, with skeleton. [1973]. ***GARC***

CHA 009 Foggara group 26°33.20/13°11.70
A group of 4-5 foggara channels originating on the E slopes of al-Kharaʿiq hill, then running to the NW into the Wādī centre. Traceable on APs over *c.*1.5km.

Figure 15.12. CHA 023, poorly preserved qasr *by salt flats (photo: FP 1998).*

Figure 15.13. CHA 023, detail of mudbrick wall of qasr *(photo: FP 1998).*

Plotted from APs only. It is likely that there was a further group of foggaras N of the CHA 004-007 settlement, where several suggestive lines of small plants can still be observed. One channel from this area is still visible and was recorded separately, see CHA 031 below. ***GAR***
***Ills: AF 1*, 245.**

CHA 010 Foggara 26°32.90/13°11.94
Foggara channel *c.*1km long and two feeder channels in open ground to E of CHA 009. A further isolated channel lies a little to the east, running towards Qarāqra village, possibly joining GRA 003 channels. ***GAR***
***Ills: AF 1*, 245.**

Figure 15.14. CHA 025, marabout monument (photo: FP 1998).

Figure 15.15. CHA 027, surface appearance of settlement site within oasis (photo: FP 1998).

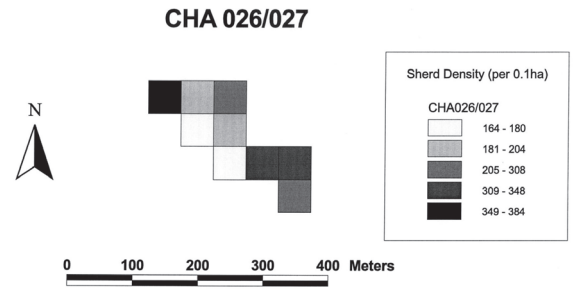


Figure 15.16. CHA 026/027, pottery distribution from oasis settlement (FP 1998).

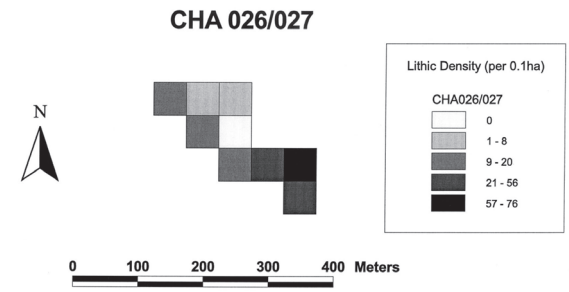


Figure 15.17. CHA 026/027, lithics distribution within oasis zone (FP 1998).

CHA 011 Foggara group 26°32.90/13°10.26
Large group of *c.*15 foggara channels running N from isolated hill into Wādī centre, traceable over *c.*1.4km. The development and amalgamation of foggara channels is evident: one channel crosses the line of another, and the 3rd foggara from the W of the group seems to have been tapped near its downstream end by the next foggara to its E. ***GAR***
***Ills: AF 1*, 245.**

CHA 012 Cemetery 26°32.70/13°10.26
Cairn cemetery above foggara CHA 011. Scatter of dispersed cairns on lower slopes of hill, identified on APs only and not located on ground. ***LPAST? GAR?***

CHA 023 *Qasr* 26°33.90/13°11.72
A large, low mud-brick *qasr* in poor repair. The S and W sides have been largely swept away by recent earthmoving and the interior is heavily disturbed. The structure makes use of salt-hardened brown mudbricks very similar to those employed in the *kasba*, city walls and late houses at Old Jarma. The site was at least 33 x 30m in extent and originally probably rather larger, with external D-fronted bastion towers in the centre of the preserved N and E sides. There are clear signs of rooms ranged around the inside of the main N and E wall and foundations extend further to the SW, suggesting a densely built up interior. [1999]. ***ISLAM-EMOD?***
***Ills: AF 2*, Figs 15.12-15.13.**

CHA 024 Industrial site 26°33.92/13°11.77
This is an industrial site, probably involved in salt production, located on the edge of the salt flat N of the al-Khara'iq oasis, a few 100m NW of CHA 026/027 and just to the E of CHA 023 (see section 43 below). The site comprised a series of four hearths that were preserved at ground level, arranged in an E-W row. The features were D-shaped, with their fronts missing, and with an external diameter of *c.*80cm. They had thick walls (≤15cm), showing signs of several relinings. There were also heaps of ash and non-metalliferous slag in close proximity to the hearths. No dating evidence was recovered from this site. [1999, not relocated in 2001 – perhaps covered in windblown sand]. ***GAR-EMOD***
***Ills: AF 2*, Figs 43.5-43.6, 43.8.**

CHA 025 Marabout tomb 26°33.61/13°11.70
A mudbrick marabout monument within a small enclosure (dimensions: *c.*5 x 3m, walls 25cm thick x 65cm high; S wall is 80cm high), with pairs of bricks set on top at each corner in an A-shape. The outside of the walls has a thin plaster or mud-wash. Although in disrepair, there are still two flags on the structure and pots for offerings and incense burners at the S end of the structure. [1999]. ***ISLAM-EMOD***
***Ills: AF 2*, Fig. 15.14.**

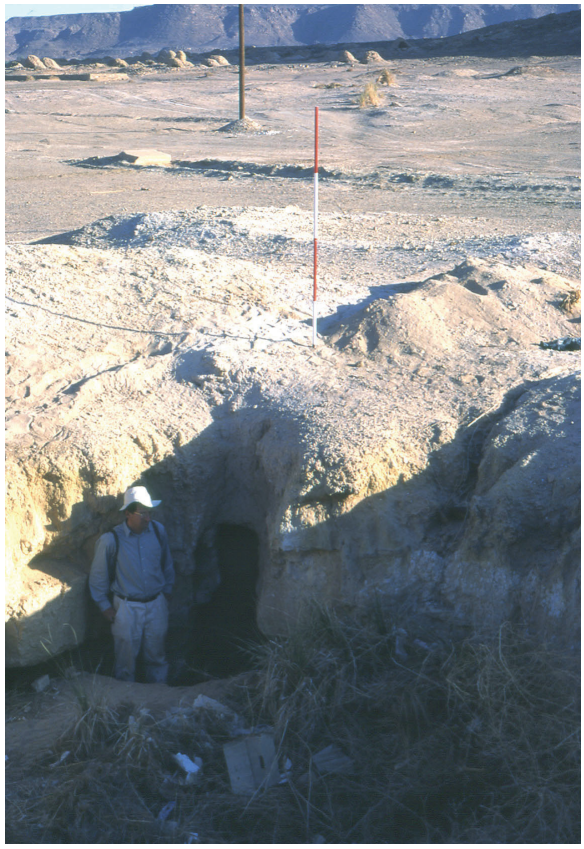


Figure 15.18. CHA 031, foggara channel exposed at shallow depth in collapsed section (FP 1998).

CHA 026 Settlement 26°33.79/13°11.98
Poorly-preserved elements of a mudbrick building on the top of a small low mound and a dense scatter of sherds of Roman date indicates the location of another probable settlement site within the oasis. Gridwalked, with total area of sherd scatter *c.*50 x 100m. [1999]. **PUGAR, CGAR**
***Ills: AF 2*, Figs 15.15-15.17.**

CHA 027 Settlement 26°33.84/13°11.92
A large spread of Garamantian/Roman pottery within the oasis at least 200 x 100m, *c.*100m N of site CHA 026. Gridwalking suggests the combined area of the two sites extended over at least 2ha. It is likely that CHA 026 was an outlying part of CHA 027. The majority of the more diagnostic material suggests a 1st-or 2nd-century date. [1999]. **PUGAR, CGAR**
***Ills: AF 2*, Figs 15.15-15.17.**

CHA 030 Settlement 26°33.73/13°11.27
A Garamantian settlement site, situated *c.*700m NW of the al-Khara'iq pyramid cemetery (CHA 001) on the line of the foggara excavated by the cemetery (CHA 031), and near the point where that foggara would have emerged as a surface feature. The site is indicated by traces of mudbrick building and a substantial and widespread pottery scatter (*c.*200m E-W x 150m N-S). On the SE side of the site there is a low mound, on which there are substantial traces of industrial activity, comprising numerous discrete deposits of ash and charcoal, along with non-metallurgical residues (possibly from salt refining). There is also a small amount of iron smithing slag. Pottery includes diagnostic material of 1st-2nd century AD date. [Site located in 1999 and revisited 2001]. **CGAR**

CHA 031 Foggara 26°33.47/13°11.52
F31. Single channel to W of CHA 009 group, probably part of a now levelled group of foggaras to N of CHA 004-007. A shaft close to the mother well was excavated in 1999 and sections of the channel cleaned (*AF 1*, 253-55). The channel floor here lay at 3.73m below the modern ground surface, and was dug into two marl strata. The base of the channel was in an unfissured (and therefore impermeable) marl, over which lay a fissured marl layer that was evidently the aquifer tapped by the foggara. A small modern well had been dug through the bottom of the channel in the 1950s but was now dry. Further sections of the channel were cleaned where they were exposed to the NW in a large open pit. On the N side of the pit the channel dimensions were 55cm wide × 1.30m high, on the S side, 30cm wide and *c.*1.25m high. The top of the channel roof lies 80cm below the present ground surface. Topographic survey established that the outflow of this foggara as a surface channel would have lain *c.*650m to the NW in the heart of the modern zone of oasis cultivation, near Garamantian settlement CHA 030. At all points where the channel was investigated it was choked almost to the roof with water-deposited sand. Three distinct layers of mud/silt were apparent over the floor, where water had ponded in the channel, perhaps due to an obstruction (roof collapse?) downstream. Abandonment was therefore probably due more to lack of maintenance than to total drying up of the aquifer. A charcoal sample from over halfway up the fill of the channel proved to be 'modern' (OxA-9581: 152.4±0.5 BP). [1999]. ***GAR***
***Ills: AF 1*, 245, 252-54, 274; *AF 2*, Fig. 15.18.**

SECTION 16. QARĀQRA [GRAGRA] (GRA)

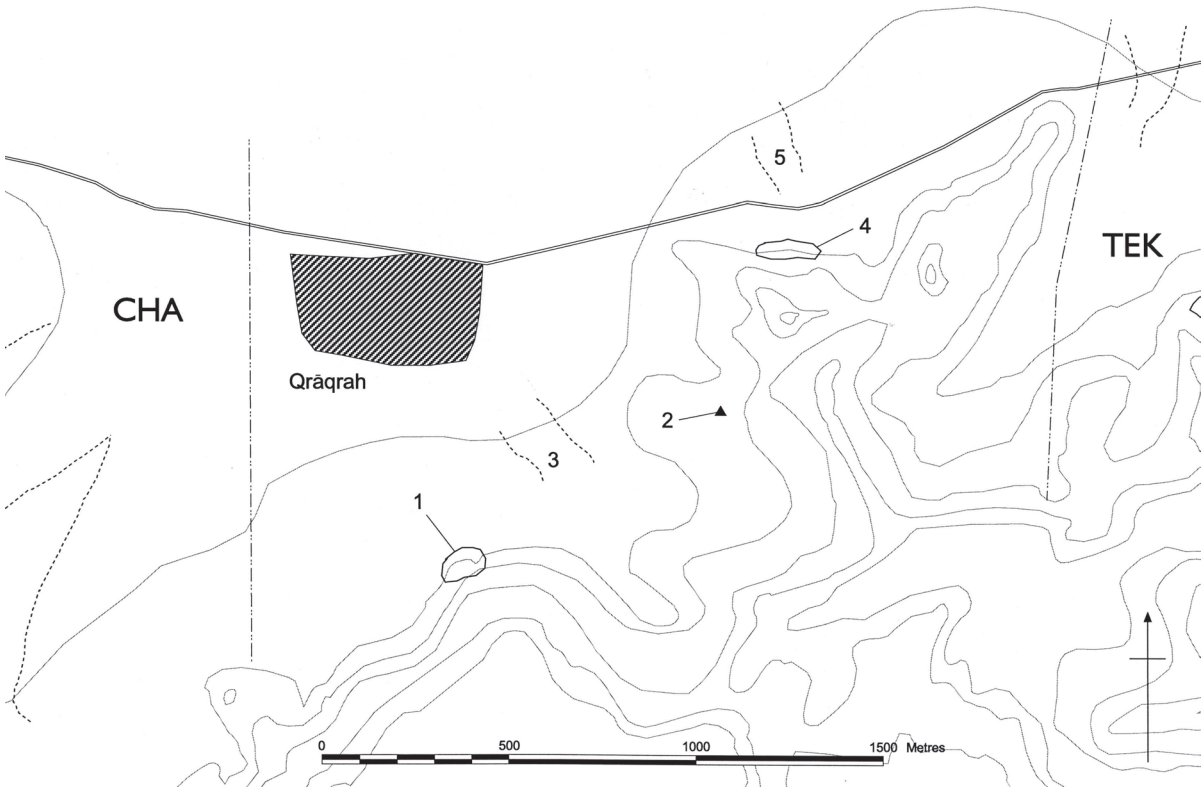


Figure 16.1. Map of sites in Qarāqra sector (CMD/FP).

The Qarāqra (previously 'Gragra') area forms the E end of this section of the Wādī between the Fugār and Takarkība headlands. In the late 1950s, old Qarāqra village (Figs 16.2-3) was the only significant settlement in this sector (Scarin 1937b, 624 – 336 inhabitants, 7,000 date palms). The historic walled village (Scarin 1934, 93-94, for sketch plan and brief discussion, 100-01, for the mosque and *zawiya*) is now being rapidly lost amid modern development, though the risks of building construction over forgotten foggara shafts have recently been demonstrated here (*AF* 1, 248). There appears to have been quite dense agriculture around wells in the Wādī centre to the N. The escarpment edge to the S is notable for the scarcity of cemeteries. CMD appears to have confirmed the absence of cairns along most of the escarpment but no survey has been carried out in the Wādī interior N of the roadline.

***Ills: AF 1*, 245; *Ills: AF 2*, Figs 16.1-16.3.**

GRA 001 Cemetery 26°32.60/13°12.54
Small cemetery of dispersed cairns on escarpment edge to S of small isolated hill, S of Qarāqra village. Estimated *c.*50 cairns scattered along base of escarpment with possible discrete clusters of tombs. [1977]. ***LPAST? GAR?***

Figure 16.2. Qarāqra village in 1958, exterior wall (photo: CMD 1958).

Figure 16.3. Qarāqra village, general view (photo: CMD 1958).

Figure 16.4. GRA 002, escarpment settlement, location on terrace (photo: FP 2001).

Figure 16.5. GRA 002, escarpment settlement, structures on terrace (photo: FP 2001).

GRA 002 Escarpment settlement 26°33.06/13°13.10

Large hilltop settlement on the escarpment edge to E of Qarāqra, at a point where the hamada approaches close to the oasis. The site faces the al-Khara'iq hilltop settlement (CHA 004-007), with which it shares some characteristics) across a broad embayment. Many small stone structures were identified by David Edwards on the 1958 APs and confirmed by ground survey in 2001. The site is constructed on a series of W-facing terraces, with a steep approach up the escarpment from the W and N. To the E and S, the site is bounded by a very steep pyramidical hill, on top of which a marabout burial has been placed, and approach from this direction would have been difficult. There are no indications that the natural defences of the site were augmented by walls. The buildings are mostly of oval or sub-rectangular form, *c.*5 x 3m, with some more circular or sub-circular of *c.*3m diameter. Generally the structures comprise just a single room, though occasionally two or three units abut. Some walls are fairly vestigial, others preserved to a few rough courses. A few buildings have rough blocks set orthostatically, standing up to *c.*50cm high. In one case, a thin line of slabs set in the floor of a hut appears to indicate an internal division or feature. The form of the structures is similar to those noted on Zinkekrā (ZIN 001-003) and al-Khara'iq (CHA 004-007). Pottery recovered from the site comprises a range of impressed and decorated forms, which bear some resemblance to both the early wares from Zinkekrā and to the late Pastoral tradition. An early first millennium date for the site appears likely. There are several probably later burial cairns on the fringes of the site and these may explain the presence of a very few sherds of later wheel-made pottery. [2001]. **LPAST, EGAR, PUGAR**
***Ills: AF 2*, Figs 16.4-16.5.**

GRA 003 Foggara group 26°32.90/13°12.60

A group of 8-9 foggara channels running NW from a small embayment, passing beneath Qarāqra village, probably running into the Wādī centre to the NW of it. By 2000 largely masked by recent buildings but two elements of what was probably this system were identified in 1998 in the W part of Qarāqra village.

F30: In 1998 the floor of a bedroom in a modern house collapsed in the middle of the night into a foggara shaft below. A young man and his father (who fell in on top of him while trying to rescue him) were lucky to escape with only minor injuries. The shaft was measured as 9.50m deep from the floor of the room to the top of the fill. The shaft is rock-cut, and measured *c.*1m x 65cm in plan. [1998]. ***GAR***
***Ills: AF 1*, 245, 248.**

GRA 004 Cemetery 26°33.20/13°13.26

A thin scatter of cairns along the foot of the escarpment. No significant groups identified, although there are some indications on APs that this area was heavily quarried for stone during the late 1950s. Possible nucleated grave cluster towards NE promontory, unconfirmed. ***LPAST? GAR?***

GRA 005 Foggara group 26°33.30/13°13.14

Cluster of 3-4 foggara crossing roadline to N of GRA 004, E of Qarāqra village. Located on APs only. ***GAR***
***Ills: AF 1*, 245.**

SECTION 17. TAKARKĪBA [TEKERTIBAH] (TEK)

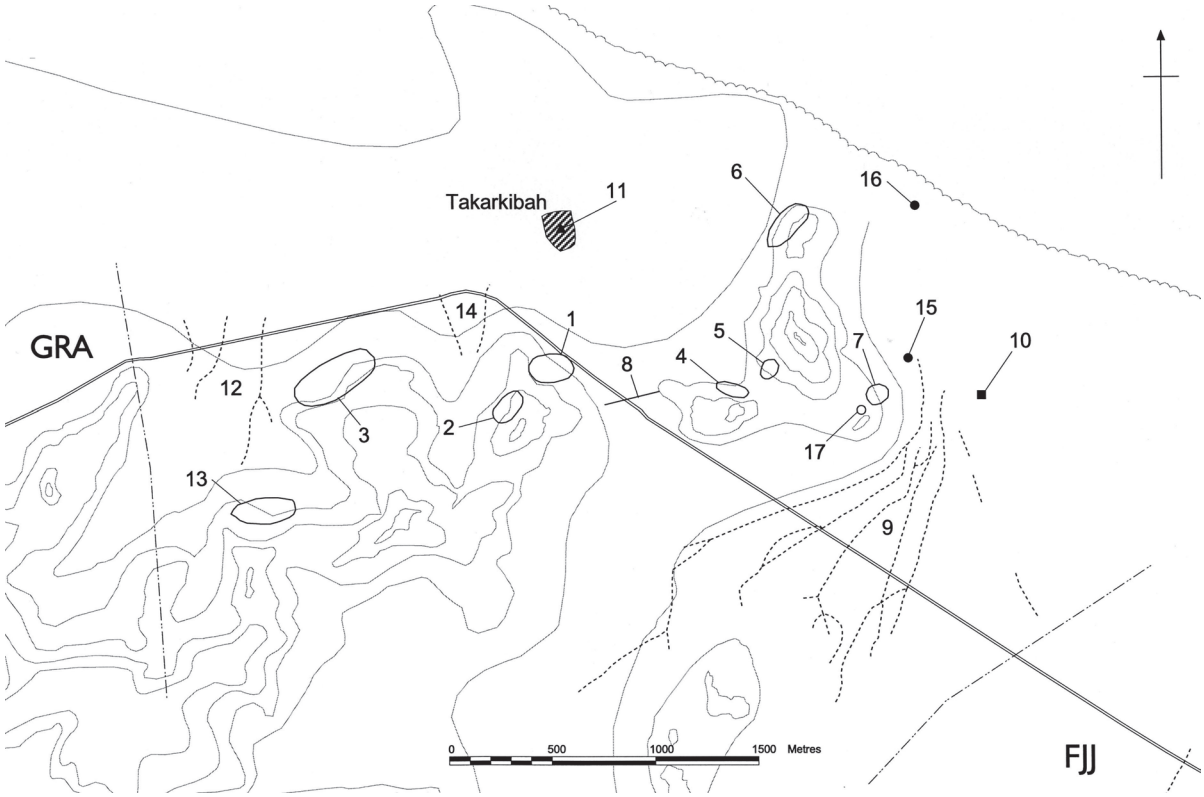


Figure 17.1. Map of sites in Takarkība sector (CMD/FP).

The Takarkība (also Tekertibah) area is centred on a headland and an adjacent detached hill that together bring the escarpment up to the edge of the sand sea in one of the narrowest points of the valley. The oasis is in effect bisected by the detached hill and, because the area to the N of the hill is very sandy, the main E-W route along the valley is forced to take a narrow pass between the escarpment and the hill. During the 19th century, this headland and pass marked the dividing point between the E (al-Wādī ash-Sharqī) and W (al-Wādī al-Gharbī) sectors of the Wādī al-Ajāl and the two areas are often reported under these separate names by early travellers. It is exceedingly interesting that a substantial wall (TEK 008) of uncertain date was built in this location, presumably to control movement into/out of al-Wādī al-Gharbī.

Two substantial early modern settlements lay on either side of the rocky salient, TEK 010 to E and TEK 011 (the more important one) to W (Scarin 1937b, 624 – 230 inhabitants, 9,000 palms), both now abandoned. When visited by Barth in 1850, one of these held some 40 families, "the most populous place in the valley next to Ubārī". He also recorded traditions about a foggara ('subterranean aqueduct'), blocked by that date (1857, 148). Caputo excavated in a cemetery in this area, but its exact location remains uncertain, perhaps TEK 004-006 (Pace *et al.* 1951, 373-6).

The area was traversed by CMD in 1958-9, with further survey around the headland in 1965 and 1977. During the FP 2000 season some further limited fieldwork was undertaken, while the TEK 010 settlement was surveyed.

***Ills: AF 1*, 245; *AF 2*, Fig. 17.1.**

TEK 001 Cemtery 26°33.50/13°14.64

Type 3 nucleated cemetery of some *c.*100-150 burials, mainly type 2b shaft graves but with a few built tombs also, all on the lower slopes of the escarpment edge. There is no sign of occupation or further burials on the low terrace to E. Heavily robbed by 1965.

A number of stele were found still *in situ* by shaft graves, generally on their E sides. Less evidence was found for offering tables, although one fragment was found on the surface on the W side of the site and another example was excavated from in front of a stele. A lot of clay mortar in evidence on some tombs indicates superstructures and one tomb may have been of rectangular stepped form (type 5b?), capped with small stones. [1965, 1977]. ***CGAR***

***Ills: AF 2*, Figs 17.2-17.4.**

Figure 17.2. TEK 001, general view of cemetery (photo: CMD 1965).

Figure 17.3. TEK 001, shaft graves and in situ *hands (photo: CMD 1965).*

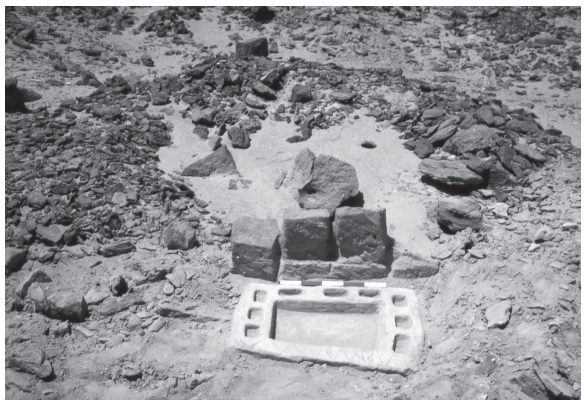


Figure 17.4. TEK 001, broken type 4a stele in situ *by type 2b shaft burial (photo: CMD 1965).*

TEK 002 Cemetery 26°33.40/13°14.52
Cemetery of dispersed cairns on W-facing slopes, W of TEK 001. Much disturbed and robbed; thought likely to have been in antiquity. Very few finds. A possible cluster of nucleated graves within this area is also visible on AP coverage but has not been confirmed. [1965]. **CGAR**

Figure 17.5. TEK 008, wall across the narrow pass between rocky outcrops of the hamada (photo: CMD 1959).

TEK 003 Cemetery? 26°33.40/13°14.16
A few graves round headland to W of TEK 002. Small stones rather than large stone piles, much disturbed. A small cluster of nucleated graves are also visible on AP coverage but have not been confirmed. [1965]. ***LPAST? GAR?***

TEK 004 Cemetery 26°33.40/13°15.12
A straggle of *c.*20 cairns along side of scarp. Not surveyed on ground and exact location not confirmed. ***LPAST? GAR?***

TEK 005 Cemetery 26°33.40/13°15.18
A row of *c.*12 cairns on opposite side (E) to TEK 004 of gap between the two highest masses of the detached hill. Location unconfirmed. ***LPAST? GAR?***

TEK 006 Cemetery 26°33.80/13°15.30
Tombs spread along N side of hill with further sparse scatters nearby; E side of hill clear of features until TEK 007. ***LPAST? GAR?***

TEK 007 Cemetery 26°33.40/13°15.42
Large nucleated cemetery, involving shaft burials and small cairns with a lot of small stone on them. Possibly *c.*100, with one or two larger examples. Sparse finds. Location unconfirmed. ***PUGAR? CGAR?***

TEK 008 Wall 26°33.40/13°14.88
The narrow pass between the hills at Takarkība was closed by a stone bank across the gap and carrying on a short distance up the S escarpment, which at this point ends in a low spur. In 1959, the barrier still survived as a low mound *c.*5m wide and *c.*2m high, built of mud and stone, but almost nothing of it survives today. In its original state it may have been mudbrick wall on a stone foundation, and the whole clay-bonded. Some traces of a stone face still survived on the E side, while none were detected on the W. This suggests that the wall was built as a defence

Figure 17.6. TEK 010, qasr *and village, general view looking N (photo: FP 2000).*

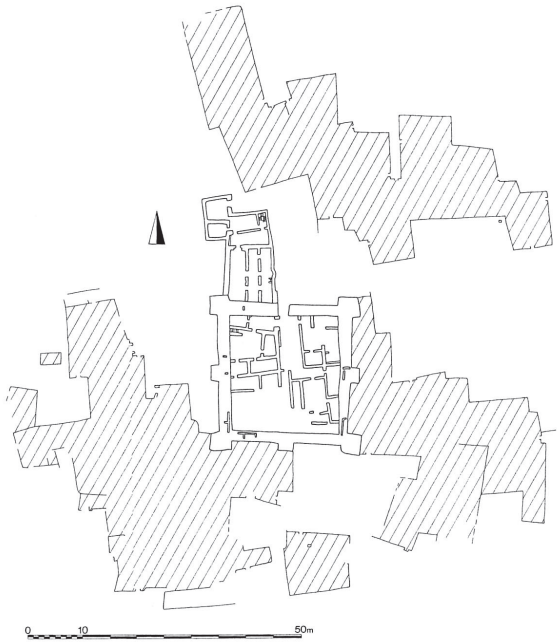


Figure 17.7. TEK 010, plan of qasr*, with outline of areas of dense external housing (FP 2000).*

against penetration from the E Wādī or Bāb al-Maknūsa. A gap in the N side of the wall represents erosion by a stream. This wall was noted by Barth in 1850 (1857, 148). [1959]. ***GAR?***
***Ills: AF 2*, Fig. 17.1, 17.5.**

TEK 009 Foggara group 26°33.20/13°15.54
Possibly eight major channels 1-2km long running from main escarpment slopes to NE and then N around the E side of detached hill into agricultural area NW of TEK 010. Some have converging tributaries in their upstream sections. Plotted from APs. When crossing this area, CMD noted that the channels "seem to empty themselves, and the ground is seasonably very wet. We crossed caked mud and salt pan of what had been a very soft area." ***GAR***
***Ills: AF 1*, 245.**

Figure 17.8. TEK 010, view of mudbrick houses close to exterior S wall of qasr *(photo: FP 2000).*

TEK 010 *Qasr*, settlement, mosque, cemetery 26°33.33/13°15.86
Qasr and associated settlement ('old Fjayj'?) to E of headland. The *qasr* has a mosque built onto its N wall. Both structures form the core of an extensive settlement of mudbrick houses. The mosque ('Moschea di el-Fgeg') was recorded and a sketch plan published by Scarin (1934, Tav.IV, B). The settlement falls into three main sections – to SE, SW and N of the *qasr*/mosque complex. There is an open piazza in front of the main (N) gate of the *qasr*, defined by the mosque and the areas of dense housing (not planned in detail in Fig. 17.7). Although there is no perimeter defence around the village, the houses abut each other in such a way as to leave a near continuous outer façade pierced by few entrances. An AMS date (OxA-10100 1110±40BP), from organic material incorporated in a mudbrick of the *qasr*, suggests an Early Islamic date (9th-11th century AD), though that could perhaps indicate activity in the vicinity at that time rather than the physical construction of the *qasr*. By 2000, the settlement was abandoned although the Islamic cemetery to E remains in use. ***EMOD***
***Ills: AF 1*, 152, 174, 183-84, 367; *AF 2*, Fig. 17.6-17.11, 44.19-44.20.**

Figure 17.9. TEK 010, detail of small internal window (photo: FP 2000).

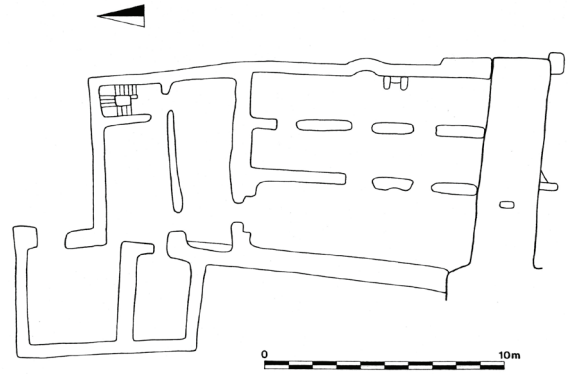


Figure 17.10. TEK 010, plan of mosque (FP 2000, after Scarin 1934).

Figure 17.11. TEK 010, view of prayer hall, with mihrab to right (photo: FP 2000).

TEK 011 Settlement 26°33.80/13°14.70
The old nucleated village settlement of Takarkība, is now covered by a modern development. According to Scarin (1937b, 624) there was a ruined *qasr* adjacent to the walled mudbrick settlement here. ***ISLAM-EMOD?***

TEK 012 Foggara group 26°33.30/13°13.92
Group of three foggara channels up to 800m long. The E foggara has a short tributary joining it from the E, about two thirds of the way along its length. Plotted from AP coverage. ***GAR***
***Ills: AF 1*, 245**

TEK 013 Cemetery 26°33.20/13°13.98
Dispersed cemetery of estimated 50+ cairns running along escarpment foot. Plotted from APs only. ***LPAST? GAR?***

TEK 014 Foggara group 26°33.50/13°14.46
Two or three foggara channels, running due N for a length of *c.*400m, W of Old Takarkība. Plotted from APs. ***GAR***
***Ills: AF 1*, 245**

TEK 015 Lithics scatter 26°33.50/13°15.54
Lithics flake scatter (c.300 x 100m) with retouched blade, denticulates, Aterian tanged blade, on disturbed surface between pediment and Qaṣr Takarkība (TEK 010). (FP2000-06.11) [2000]. **PAL**
***Ills: AF 2*, Fig. 42.2.**

TEK 016 Lithics scatter 26°33.95/13°15.48
Plentiful spread of coarse-grained flakes and blades on pediment slope of escarpment. (FP2000-06.9) [2000]. **PAL**

TEK 017 Cemetery?, lithics scatter 26°33.41/13°15.37
Cluster of eight small stone circles (perhaps graves) and flake scatters (similar to FJJ 047) at the base of cliff on pediment plateau. (FP2000-06.10) [2000]. **[PAL]**

b) Eastern Wādī al-Ajāl (al-Wādī ash-Sharqī)

SECTION 18. AL-FJAYJ [FJEJ] (FJJ)

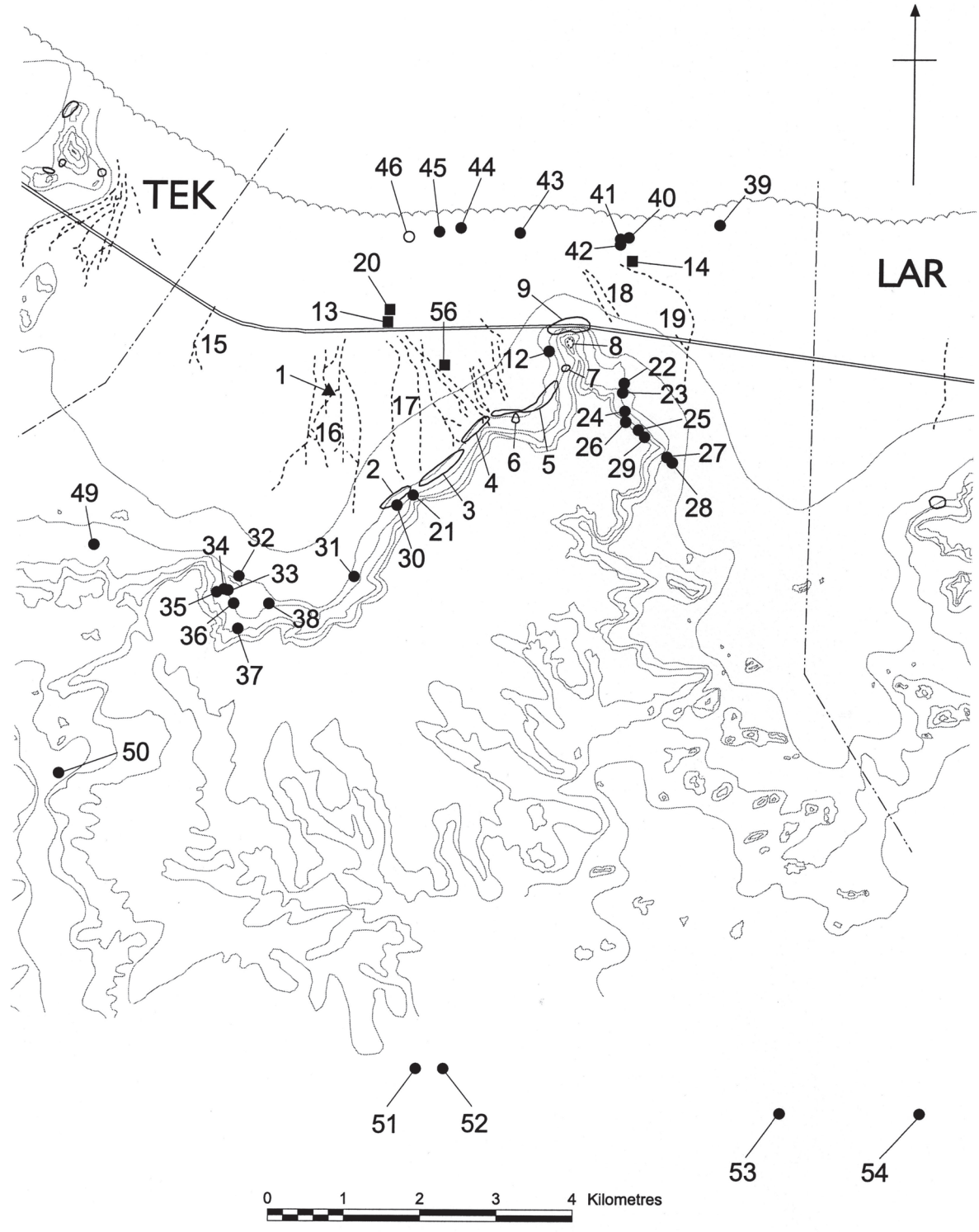


Figure 18.1. Map of sites in al-Fjayj sector (CMD/FP).

The al-Fjayj ('Fjej') area, E of Takarkība, is an open plain with, as late as the 1960s, settlement limited to scattered farms in the Wādī centre. The early modern village of Fjayj was the westernmost of the Wādī ash-Sharqī (Scarin 1937b, 623-24 – 122 inhabitants, 1,100 date palms; see also Scarin 1934). In 1932, the Wādī ash-Sharqī had only 1,743 inhabitants (Scarin 1934, 77) and in some parts of the valley the population was dispersed between several minor hamlets, rather than congregated in a main village. The E end of the area towards the Fjayj headland was an empty sandy plain (Fig. 18.2). Qaṣr Fjayj (FJJ 056) was first visited and

Figure 18.2. The desolate al-Fajayj plain, with Qaṣr Fjayj (FJJ 056), looking N (photo: CMD 1965).

recorded by CMD in 1959. The Fjayj escarpment was selected for more detailed survey in 1965, when a total of some 3.5km of W-facing slopes were examined on foot with more detailed recording of individual sites and features within them. The escarpment cemeteries include extensive spreads of dispersed cairns, as well as several substantial nucleated cemeteries. He did not carry out ground survey within the Wādī centre, and the two settlement sites FJJ 013 and FJJ 020, identified on APs were only confirmed on the ground during 2000.

The Fjayj headland marks another narrow point in the valley, with the distance between escarpment and sand sea here only *c.*1.5km, though the embayment between the Fjayj and Takarkība is up to 5km deep. An interesting feature of this area is the extent to which ancient occupation is restricted to the W side of the headland, the E side being devoid of cemeteries or settlements, leaving a substantial gap in the area N of the Bāb al-Maknūsa as far as Lārkū. Qaṣr Fjayj (FJJ 056) was resurveyed in 2000; sites with FP2000-05-07 identifiers were recorded by line-walking in the 2000 season. A preliminary survey of rock drawings, some previously recorded (Pauphillet 1953) was also carried out in 2000 (see also Barnett 2002 for continued work after the end of the FP, with sites in the Bāb al-Maknūsa recorded by her as MAK 001-019 – there is some overlap here with the FJJ series). Here the bulk of the recorded images were located on the E side of the Fjayj headland and down the W side of the Maknūsa pass.

***Ills: AF 1*, 148, 245; *AF 2*, Figs 18.1-18.2.**

FJJ 001 Settlement 26°31.98/13°17.06

A settlement of possible Garamantian/Roman period or later date, overlying the spoil bank of foggara F29 in group FJJ 016, to the N of the modern road. Hut scoops (perhaps representing the footprints of zarība or palm frond houses) are cut into the foggara spoil bank and in one of these a pot was excavated *in situ*.

Further to the N were remains of a possible wall and a sub-circular structure apparently built of pieces of calcareous surface crust. Surface collection produced lithic cores and tools, pounders and abundant pottery – besides the usual black and red Berber Ware, some painted pottery, some sherds with 3-hole decoration, ARS fabric, and wheel-thrown wares. Date: 1st to 4th century AD. The complete pot is a type (HM 355) that is thought from its absence in lower levels in the Jarma excavations to be post-Garamantian in date (though examples have been found in surface sherding at several Garamantian sites). It is conceivable that we have two overlapping settlements here, one of recent date and the other of Garamantian age – further investigation is required to clarify the relationship with the underlying foggara. **CGAR, EMOD [PAL]**

***Ills: AF 1*, 263; *AF 2*, Fig. 18.3.**

FJJ 002 Cemetery 26°31.21/13°17.76

A Type 2 dispersed cairn cemetery whose SW end marks the limit of burials along this part of the escarpment. Total of *c.*70 cairns with main group of *c.*20-30. Some burials 4-5m across with large type 1 mound cairns and some type 3a drum cairns, probably over cist graves. In several cases, cairns are built against boulders. Built of black weathered stone, contrasting with the sandstone slopes and the orange sand in the robbed-out chambers. One possible intact tomb with two large slab stele propped against E face of the cairn. Pottery has 'late Punic' types. [1965, 2000]

2.1: mound cairns with two 'stone bowls' on E side. **2.2**: mound cairn. Two bowl rims in local black <3078> and red <3009>. **2.3**: conical mound cairn. Wall sherds of amphora found near it. **2.4**: mound cairns over a cist burial, built of quite large stones. Fragments of a red flagon, with slight ribbing on shoulder <3000> in vicinity. **2.6**: possibly unrobbed group of two adjoining drum cairns. The primary tomb was an oval structure *c.*3.15m NS x 4.6m WE, with two crude slab stele against its E face. The sides are built of large stones with smaller stones infilling. A second tomb was built against its NW side, *c.*2.3m NS x 2.4m EW. Imported redware bowl <332> and amphora sherds found around it. **2.7**: subcircular drum cairn incorporating some large boulders, D: *c.*3.35m. Two slab stele, one broken, *in situ* on E (NE) face of tomb. Slabs quite small: in size 84cm x 38cm, 25cm x 33cm.

Figure 18.3. FJJ 001, vestigial traces of huts cut into spoil banks of foggara (photo: FP 1998).

Figure 18.4. FJJ 002.1, stone bowls for offerings (photo: CMD 1965).

Figure 18.5. FJJ 002.3, mound cairn (photo: CMD 1965).

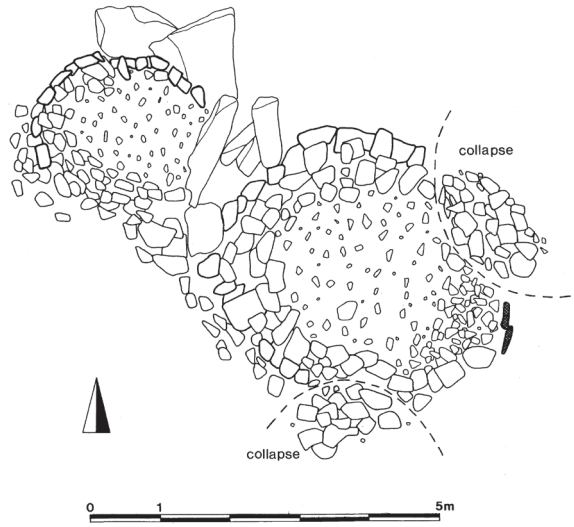


Figure 18.6. FJJ 002.6, sketch plan of drum cairns (CMD/FP).

Figure 18.7. FJJ 002.7, drum cairn (photo: CMD 1965).

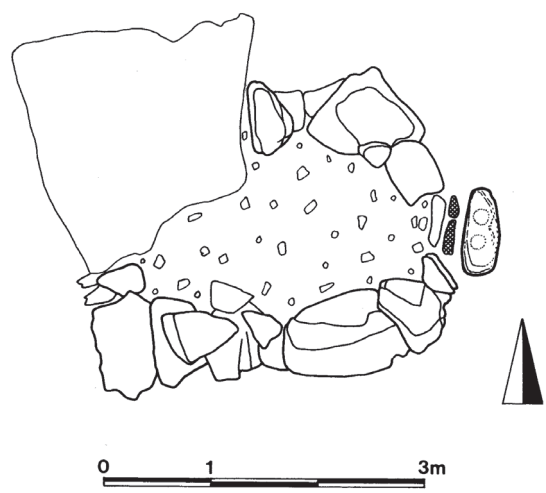


Figure 18.8. FJJ 002.7, sketch plan of drum cairn (CMD/FP).

No 'stone bowls'. **2.8**: cairn built against big boulder, facing uphill. Quite regular structure with kerb of large stones and smaller stones infilling. Probably unrobbed. Two small slab stele and a crude two-hole 'offering table' in front of E face. **2.9**: complex of adjoining tombs on sloping ground, heavily robbed. The core structure was a low flat-topped drum cairn *c.*3m across with two additions on the SE and two on the NW sides. The E structure had two stele *c.*30cm tall on its E side. No 'stone bowl' found. **2.10**: probably unrobbed subcircular mound cairn *c.*3m x 3.1m. **2.11**: robbed tomb with sherds from probably four bowls. **2.12**: tomb *c.*2.75m diameter, with large slab stele *c.*65 x 60cm. **2.13**: robbed cairn. Fragments of a small imported bowl <3010>. **2.14**: photo of tomb. Large quite regular drum cairn, 4.1 x 4.7m 1.65m high. Robbed and no stele or other features. **PUGAR, CGAR**

***Ills: AF 2*, Figs 18.4-18.10.**

Figure 18.9. FJJ 002.7, drum cairn, detail of type 2 slab stele and proto-table on E side (photo: CMD 1965).

Figure 18.11. FJJ 003.1, type 1 mound cairn (photo: CMD 1965).

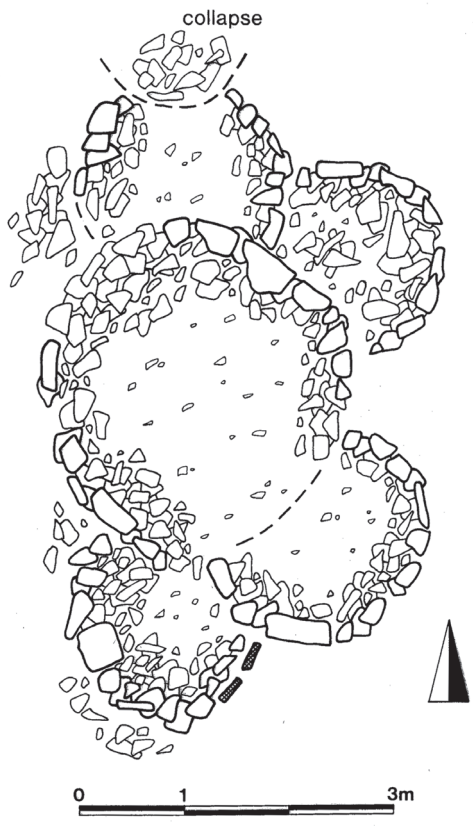


Figure 18.10. FJJ 002.9, sketch of complex of conjoined drum cairns (CMD/FP).

FJJ 003 Cemetery 26°31.46/13°18.15
Large Type 2 dispersed cemetery along escarpment NE of FJJ 002. Estimated 75-100? black stone cairns, some of which may have been excavated while many appear undisturbed. The graves are generally quite widely scattered, with large gaps between small groups. No offering tables or stele, but unworked slab stele and 'stone bowls' noted in a few cases on E side of cairns. Little sherd material, of 'late Punic' types, some possible Roman date material also in area.

3.1: unrobbed simple type 1a mound cairn. **3.2**: a quite regular subcircular cairn *c.*3.7m across, forming a rough type 3a drum cairn, with sides built of flat slabs *c.*70cm high. Stone-lined cist chamber inside. Rectangular slab stele on E side. **3.3**: cairn *c.*3.2m in diameter. Large slab stele on E side, 1.09m high x 0.8m. **3.4**: unusual subcircular stepped cairn (type 5a?) with low domed base, of 1-2 irregular courses of stone, infilled with smaller stones. On this was a circular second storey of 2-3 courses. Aligned just about EW are two projecting niches. That on the E side had two small orthostats/stele in it; no 'stone bowls' found. Some 20cm in front of this was a low mound of stones, possibly associated with it. On the W side, the niche was smaller with only one small orthostat. **3.5**: unrobbed drum cairn with large slab stele and two 'stone bowls'. **3.6**: small cairn with sherd scatter, including bowl <3019> and amphora handle. **3.7**: collapsed cairn, N-S diameter *c.*3.2m. two large slab stele and 'stone bowls' on NE side. Stele *c.*70 x 68cm and 43 x 90cm. Bowls *c.*38cm across with circular cups D:19-21cm. **3.8**: mound cairn with roughly pecked 'bowl' on slab in front of it. [1965, 2000]. **PUGAR, CGAR**
***Ills: AF 2*, Figs 18.11-18.16.**

FJJ 004 Cemetery 26°31.64/13°18.24
Small Type 4 nucleated cemetery at NE end of FJJ 003, with scattered cairns around it. Mix of type 1 mound cairns and type 2b shaft graves marked by sand-filled pits surrounded by stone rubble. Surface pottery, includes Roman imports and ARS of 2nd-4th century AD, but some 'late Punic' types in this area could have come from the earlier dispersed cairns nearby.
4.1: cairn with pottery beside it. **4.2**: low cairn with two ceramic bowls on E side, very close to a slab stele. In the absence of 'stone bowls' or basins CMD suggested that the pots may have fulfilled the same purpose. Grave has no disturbances to E and very little fall to W, so probably unrobbed. **4.4**: small group of about six tombs at foot of escarpment, with scatters of imported finewares, a lamp and other pottery. **4.5**: small group of shaft burials. Sherds

Figure 18.12. FJJ 003.2, stone-lined cist below cairn (photo: CMD 1965).

Figure 18.13. FJJ 003.4, type 5d stepped oval drum cairn (photo: CMD 1965).

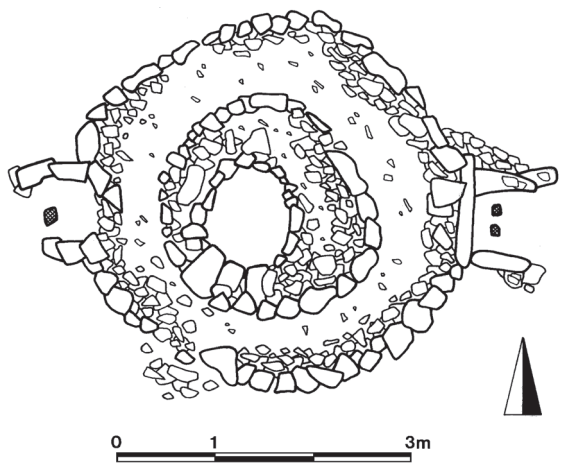


Figure 18.14. FJJ 003.4, plan showing E and W niches (CMD/FP).

Figure 18.15. FJJ 003.4, view of E niche with two small orthostats (photo: CMD 1965).

Figure 18.16. FJJ 003.5, type 3a drum cairn with slab stele and type 2 stone 'bowls' (photo: CMD 1965).

Figure 18.17. FJJ 004.2, drum cairn with slab stele and 2 broken ceramic offering bowls (photo: CMD 1965).

include RS, amphorae, flagon and Berber Red ware. [1965, 2000]. **PUGAR, CGAR**
***Ills: AF 2*, Figs 18.17-18.18.**

FJJ 005 Cemetery 26°31.7/13°18.5
Type 2 dispersed cairn cemetery along lower escarpment slopes.
5.2: cairn with some collapse on N (downslope) side, but probably unrobbed. One pot and large fragments of another found, thought likely to be a surface offering. **5.3**: cairn with several sherds of a jug <184> beside it. **5.4**: cairn with stone basin and stele on E side. **5.5**: a type 3a drum cairn with large stones used in edges, infilled with smaller stone, D:*c.*4m. Probably robbed on N side. Has two niches, on SE and SW sides. Corbelled chamber inside. **5.6**: cairn with 'double' stone basin by tomb. **5.7**:

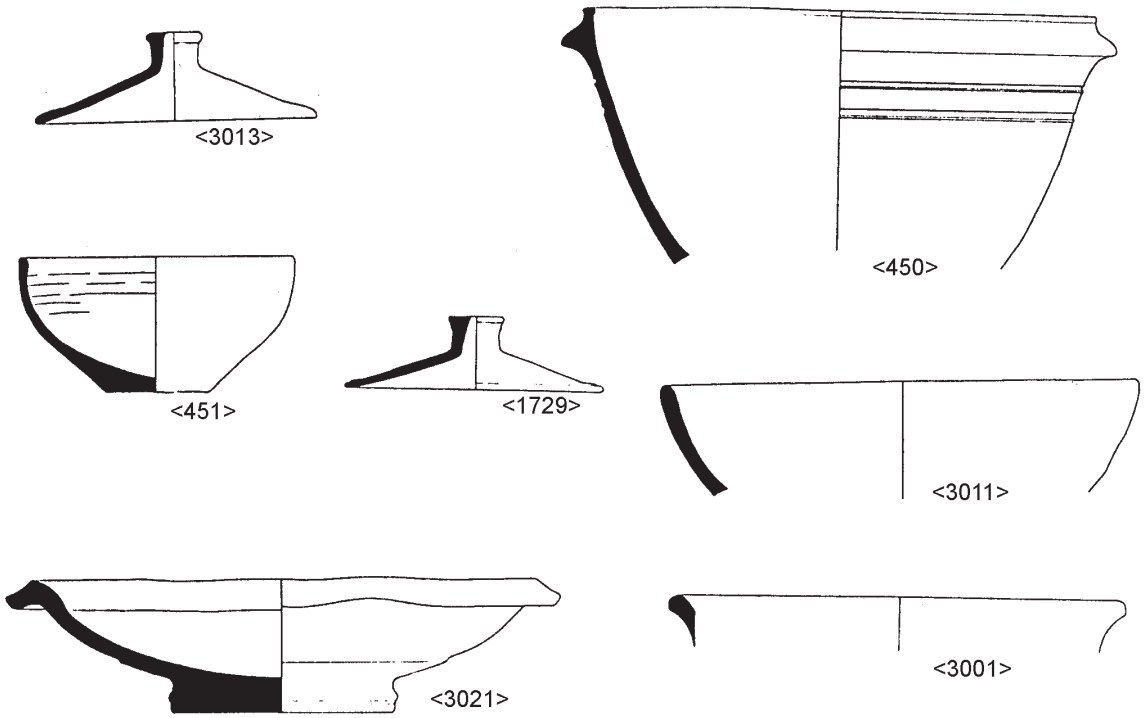


Figure 18.18. FJJ 004, selection of pottery from cemetery (CMD/FP).

robbed cairn with two slab stele and two very crude 'stone bowls'. **5.8**: cairn with very roughly pecked offering slab with one crude slab stele. **5.9**: robbed cairn (D:*c.*5m) with two slab stele on E side, one fallen and parts of a projecting niche on the E side with one 'stone bowl'. **5.10**: collapsed/robbed cairn, possibly with some form of side niche, masked by fallen stone. [1965]. ***PUGAR,* CGAR *Ills: AF 2*, Figs 18.19-18.20.**

FJJ 006 Cemetery 26°31.66/13°18.42
Discrete Type 4 nucleated group of *c.*70 type 2 shaft graves in a tight cluster at base of escarpment, within area of dispersed cairns of FJJ 005. Bounded by gully on W side. No trace of offering tables, hands, stele or bowls. Any superstructures largely robbed away exposing cist graves, some with capstones. Quite abundant surface sherds, predominantly Berber Red ware, flagons and amphorae, ARS and TRS 1st-5th century AD, some glass of 1st-3rd century types, with collections on E and W sides of site. [1965]. **CGAR, LGAR, [ISLAM]**

Figure 18.19. FJJ 005.4, rough slab stele and crude 'offering table' by drum cairn (photo: CMD 1965).

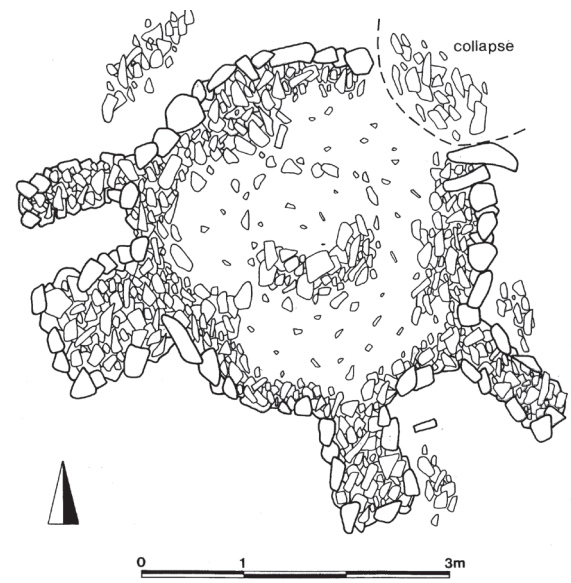


Figure 18.20. FJJ 005.5, sketch plan of type 3a drum cairn with 2 projecting niches for offerings (CMD/FP).

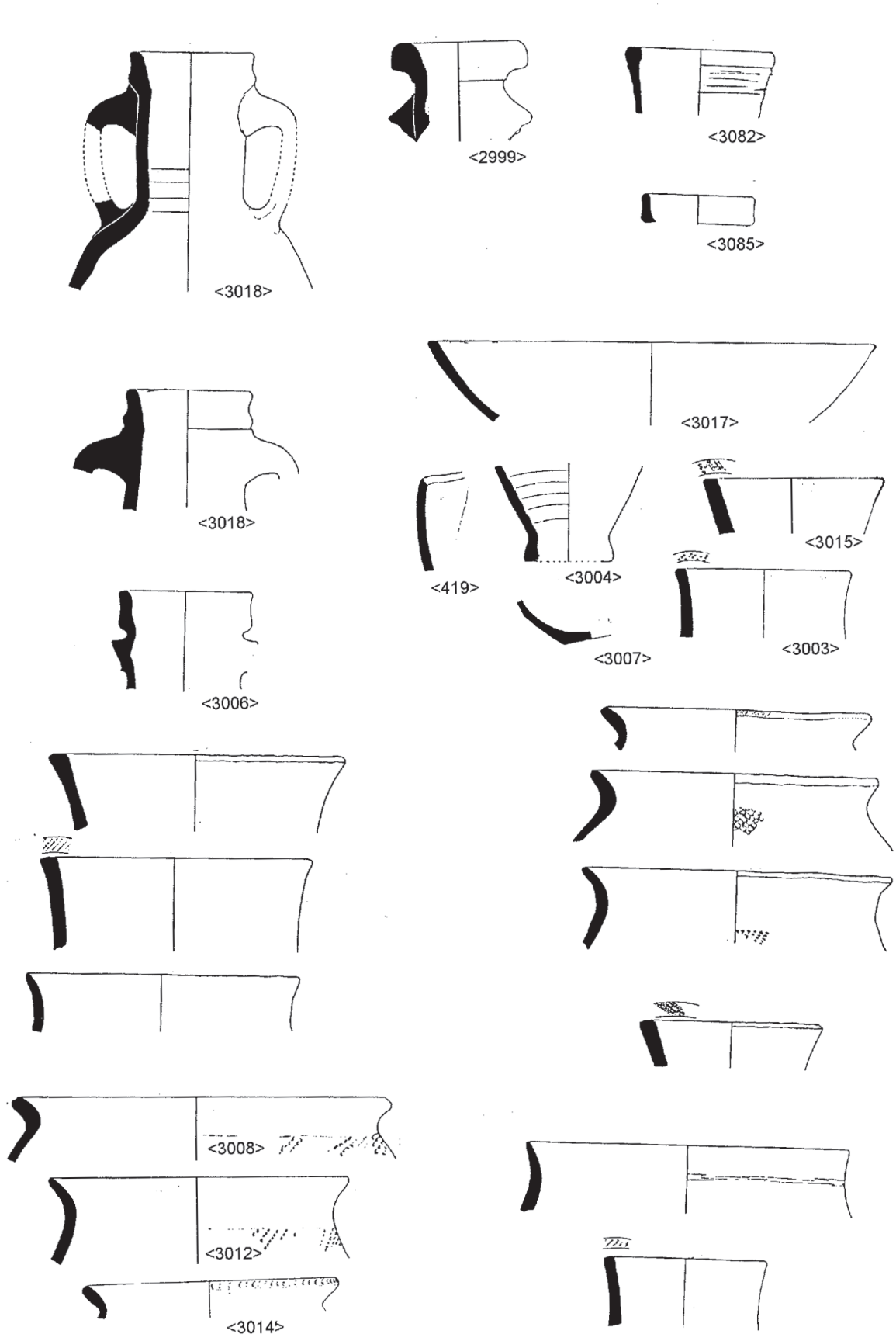


Figure 18.21. FJJ 006, selection of pottery from cemetery (CMD/FP).

***Ills: AF 2*, Fig. 18.21.**

FJJ 007 Cemetery 26°31.96/13°18.74
Compact Type 4 nucleated cemetery of type 2b shaft burials below escarpment, in three main groups. Some linear arrangement apparent from photographs from above. Sandfilled shaft graves in groups of *c.*50, 20, 10 outlined by red sandstone rubble. No trace of hands or offering tables and little pottery though partly masked by drifting sand which accumulates on the W side of the headland. Sherds include ARS of late 1st-3rd century AD. [1965]. **CGAR**
***Ills: AF 2*, Fig. 18.22.**

Figure 18.22. FJJ 007, nucleated cemetery of type 2b shaft burials (photo: CMD 1965).

FJJ 008 Occupation?/ settlement? 26°32.20/13°18.80
Traces of limited occupation in the form of a few low stone walls, rare sherds and occasional lithics. [1965]

FJJ 009 Cemetery 26°32.30/13°18.80
Type 4 nucleated cemetery at N end of headland. From photograph estimated 100-120 type 2b shaft graves minimum. Site cut through by road. Compact cemetery below escarpment slopes, comparable to FJJ 007. Visit in 2000 confirmed site destroyed by road construction. [1965, 2000]. ***CGAR***
***Ills: AF 2*, Fig. 18.23.**

Figure 18.23. FJJ 009, nucleated cemetery of type 2b shaft burials (photo: CMD 1965).

FJJ 010 Cemetery Not on map
Small nucleated cemetery of 50-55 graves, probably sand-filled shaft burials. Location uncertain, probably to E of al-Fjayj headland. [1965]. ***CGAR***

FJJ 011 Settlement, cemetery Not on map
Traces of occupation on low hill. Low screen wall, fragments of Berber Red ware pottery (relatively modern?) and some harder finer sherds. Several graves on N side of hilltop and possibly a set around top, or possibly even military foxholes? Rough lines on surface possibly indicated tents. Location uncertain, probably on E side of al-Fjayj headland. [1965]. ***ISLAM-EMOD?***

FJJ 012 Rock art 26°32.25/13°18.73
Rock art at end of the promontory, on vertical sandstone face about half the way up the escarpment, close to a possible spring. Noted by CMD in 1959, but not further recorded by him. Panel of predominately large wild animals. These are dominated by a series of decorated giraffe on either side of a large central elephant 1.5-2m high, possibly superimposed over the giraffe, and a smaller elephant 'underneath' the stomach of the larger pachyderm. Animals are all naturalistic, apart from the feet, which are schematic. All are deeply incised, with polished lines. Eroded with dark patination. Superimposed camels at the right hand end of the panel are less eroded and in different style. Also possible additions of goats and cattle, although these are only lightly incised and are now heavily eroded. A human figure with a bow is also a later addition to a group of giraffe. One giraffe has possible cattle horns – metamorphic animal? [1959, 2000]. ***PAST, GAR-EMOD***
***Ills: AF 1*, 296, 299; *Ills: AF 2*, Fig. 18.24-18.25.**

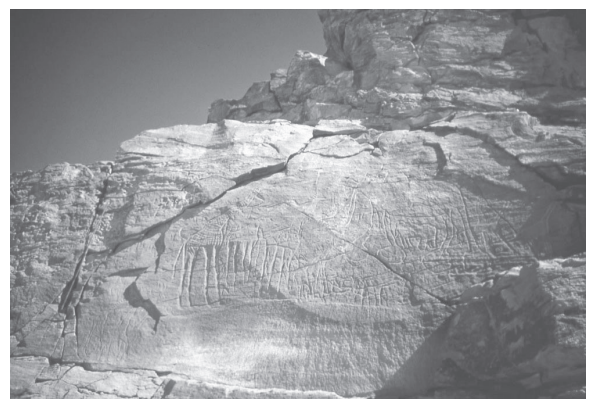


Figure 18.24. FJJ 012, main panel with elephants and giraffes (photo: CMD 1959).

FJJ 013 *Qasr* 26°32.38/13°17.58
A large rectangular mudbrick enclosure with towers and traces of internal structures, *c.*57m NS x 45m EW. Walls surviving to 4m high in places, elsewhere reduced to

Figure 18.25. FJJ 012, secondary panel with three giraffes (FP 2000).

Figure 18.26. FJJ 017, foggara spoil mounds, looking S (photo: CMD 1965).

mud mounds 2-3m high. E wall broken giving vehicle access to interior. Site now has cultivation on three sides and clearly under threat. Identified by CMD on APs but only located on ground in FP 2000 season. Some Roman-period imported pottery in area. [2000]. **CGAR**

FJJ 014 *Qasr* 26°32.77/13°19.28
Mud *qasr* now located just to N of Lārkū-New Fjayj village road. Near-square structure with wall surviving 3-4m high. Not surveyed. [2000]. ***ISLAM-EMOD?***

FJJ 015 Foggara group 26°32.10/13°16.10
Isolated foggara channel *c.*1km long, with short feeder tributary. Plotted from APs. GAR
***Ills: AF 1*, 245.**

FJJ 016 Foggara group 26°32.30/13°17.00
Dendritic group of 2-3 main foggara channels with numerous feeder branches 1.5-2.2km long. A tributary of the E system may have captured the W system at a late stage in their use. Plotted from APs. Ground survey 1998-1999 traced the channels further into the Wādī than was visible on the APs, into the modern oasis cultivation. A few of the foggaras survive, though the majority has been obliterated by recent bulldozing and land clearance. Trenches have been cut across several of them where the modern tarmac road crosses their line.
F29: foggara traceable to N and S of modern road as low mounds of gravelly and sandy spoil. The channel is exposed in a modern trench on the S side of the modern road. On the N side of the trench the channel is accessible until blocked by slumping through an access shaft in the roof *c.*3.6m N of the modern trench. The channel has been enlarged by extensive collapse. Dimensions now *c.*2.35m wide × 1.34m deep to fill caused by roof collapse. Depth below modern surface: N side: 1.70m. One shaft is exposed on the S side of the trench; diameter 1.60-1.70m, steined with rough undressed stones in its upper part. To the N of the road the foggara is overlain by the settlement site FJJ 001. [1998, 1999]. ***GAR***
***Ills: AF 1*, 245, 263.**

FJJ 017 Foggara group 26°32.20/13°17.80
Large group of *c.*11 foggaras, some with feeder tributaries, spread over *c.*1.5 km, running NW into Wādī center. Longest example *c.*1.3km, with a total of *c.*7.5km of channels. Plotted from APs. In 2000, many channels in cultivated areas have disappeared but some elements of S of road still preserved along field boundaries.

The 'mother well' of one foggara, within the area of cemetery FJJ 006, was recorded in 1965. The shaft was faced with stones for the top 1.5m, below that it was apparently clear and unlined. Top enclosed with a slight mound of spoil with a raised kerb *c.*40cm above the surrounding ground surface, probably to stop rain wash. Below the top shaft, a further three well-defined foggara pits in a line. [1965]. ***GAR***
***Ills: AF 1*, 245; *AF 2*, Fig. 18.26.**

FJJ 018 Foggara group 26°32.40/13°19.10
A pair of foggaras *c.*800m long, converging on an area to the NE of al-Fjayj headland. Plotted from APs. ***GAR***
Ills: AF 1, 245.

FJJ 019 Foggara 26°32.70/13°19.40
Long foggara curving round from E side of the Fjayj headland towards the destination of FJJ 018. Plotted from APs only, *c.*2km long. ***GAR***
***Ills: AF 1*, 245.**

FJJ 020 *Qasr*, settlement 26°32.60/13°17.65
A large sandy mound *c.*50m square and up to 4m high,

with fragments of mud wall lines exposed in some areas. The mound probably marks a heavily eroded '*qasr*' type structure. Heavily abraded surface pottery included material of medieval and/or Garamantian date. Site now surrounded by cultivation and field tracks. [2000]. ***GAR-ISLAM?***

FJJ 021 Lithics scatter 26°31.29/13°17.83
Concentration of lithic material on stony gravels at foot of escarpment, associated with subcircular cleared area *c.*6m in diameter. Early Holocene? [2000]. **EPAST**

FJJ 022 Rock art 26°32.08/13°19.31
Around the SE edge of the promontory terminus, approximately 50m from the road, on a series of single images on isolated boulders of varying size at ground level. These include incised feet at the base of the escarpment, four different pecked or incised giraffes on boulders near the top of the escarpment and two different domesticated bovids on the slopes of the escarpment. [2000]. ***PAST, GAR-EMOD***

FJJ 023 Rock art 26°32.02/13°19.29
At the base of the escarpment, along the S/SE face, approx. 100m from FJJ 022, there are two Phase IV or V rhinoceri, one with a human figure, engraved with shallow incisions on an isolated boulder. [2000]. ***PAST***

FJJ 024 Rock art 26°31.88/13°19.32
200m to the S of FJJ 023 is a well-executed pecked engraving of a Phase I reticulated giraffe on isolated boulder near the base of escarpment. Some additional lines possibly indicate a human figure (see Pauphillet 1953). [2000]. ***PAST***

FJJ 025 Rock art, cave 26°31.75/13°19.41
On a large flat boulder beside the old stream bed a short way from the Wādī floor, there is a very simple, schematic pecked outline of a giraffe (Phase IV). The boulder had also been used as a possible polishing stone. Several sharpening grooves and polishing places were recorded in this area (including outside a small rock shelter further up the escarpment) and at FJJ 022. [2000]. ***PAST***

FJJ 026 Rock art 26°31.71/13°19.22
Bovine figure recorded on the lower slopes of the escarpment by a stream course. [2000]. ***PAST***

FJJ 027 Rock art, inscriptions 26°31.56/13°19.61
Large boulder at foot of escarpment where it juts out to the E/SE. Naturalistic sheep or goats with long, slender horns, deeply incised (Phase I/II). More shallow, schematic engravings of horses with riders (Phase III) and some faintly engraved Libyan inscriptions (Phase IV). [2000]. ***LPAST, GAR-EMOD***
***Ills: AF 1*, 294, 297; *AF 2*, Figs 18.27-18.28.**

Figure 18.27. FJJ 027, deep engravings (photo: FP 2000).

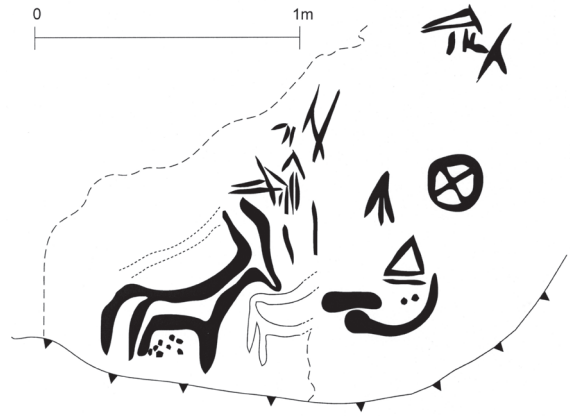


Figure 18.28. FJJ 027, tracing of engravings, including a schematic wheel (FP 2000).

Figure 18.29. FJJ 028, tracing of horsemen (FP 2000).

Figure 18.30. FJJ 028, linear incisions (photo: FP 2000).

Figure 18.31. FJJ 028, overlain engravings (photo: FP 2000).

FJJ 028 Rock art, inscriptions 26°31.52/13°19.65
Area of rock art around the foot and base of the escarpment, close to an ancient a stream course. This area is extremely obvious and lies at the very edge of the natural route between the Wādī and the hamada. Very mixed engravings and relating to several periods including a few examples of deeply incised engravings of a cow, some giraffe and a possible feline on the same rock surface. There are also some deeply incised goats with long horns superimposed over a giraffe (Phase I and II?). Several schematic depictions of horsemen, some carrying feathered ?sticks or weapons and a row of schematic creatures – possibly hornless bovids on hind legs possibly belong to Phase III. Also Libyan inscriptions and linear incisions. [2000]. ***LPAST, GAR, GAR-EMOD***
***Ills: AF 1,* 88, 287; *AF 2*, Figs 18.29-18.31.**

FJJ 029 Rock art 26°31.70/13°19.44
Two isolated boulders near the base of the escarpment facing E, close to a cemetery of small cairns. Two schematic, pecked images of long-horned, humpless bovids (Phase II/III). [2000]. ***PAST***

FJJ 030 Lithics scatter 26°31.21/13°17.69
Undated lithics débitage on sand. (FP2000-05.1) [2000]. **PAL?**

FJJ 031 Lithics scatter 26°30.71/13°17.41
Middle Holocene lithics débitage and potsherd on sand. (FP2000-05.2) [2000]. **PAST**

FJJ 032 Lithics scatter 26°30.72/13°16.59
Cluster of late Pleistocene, possibly middle Holocene lithics débitage on sand. (FP2000-05.3) [2000]. **PAL, PAST?**

FJJ 033 Lithics scatter 26°30.62/13°16.53
Cluster of late Pleistocene, possibly middle Holocene lithics débitage on sand. (FP2000-05.4) [2000]. **PAL, PAST?**

FJJ 034 Lithics scatter 26°30.63/13°16.50
Cluster late Pleistocene, possibly middle Holocene lithics débitage on sand. (FP2000-05.5) [2000]. **PAL, PAST?**

FJJ 035 Lithics scatter 26°30.61/13°16.45
Cluster of late Pleistocene, possibly middle Holocene lithics débitage on sand. (FP2000-05.6) [2000]. **PAL, PAST?**

FJJ 036 Lithics scatter 26°30.53/13°16.57
Cluster of late Pleistocene, possibly middle Holocene lithics débitage on sand. (FP2000-05.7) [2000]. **PAL, PAST?**

FJJ 037 Lithics scatter 26°30.35/13°16.60
Cluster of late Pleistocene, possibly middle Holocene lithics débitage on sand. (FP2000-05.8) [2000]. **PAL, PAST?**

FJJ 038 Lithics scatter 26°30.53/13°16.82
Cluster of late Pleistocene, possibly middle Holocene lithics débitage on sand. (FP2000-05.9) [2000]. **PAL, PAST?**

FJJ 039 Lithics scatter, occupation 26°33.21/13°19.98
Lithics scatter of fine quartzite flakes and coarse-grained cores; carnelian fragments, ostrich eggshell fragments and coarse potsherds, on low sand amid low relic spring mounds and sand dunes. (FP2000-06.1) [2000]. **PAST**

FJJ 040 Lithics scatter 26°33.12/13°19.34
A few small quartzite flake fragments on sand. (FP2000-06.2) [2000]. **PAST?**

FJJ 041 Lithics scatter, other structures 26°33.11/13°19.28
Large, possibly Holocene flake scatter with scraper amid sub-circular stone setting and southward spread of large stones and lithic flakes, on sand and gravel. (FP2000-06.3) [2000]. **PAST?**

FJJ 042 Lithics scatter 26°33.07/13°19.28
Scatter of small quartzite fragments and ostrich eggshell fragments on sand. (FP2000-06.4) [2000]. **PAST**

FJJ 043 Lithics scatter, occupation? 26°33.15/13°18.57
Lithic point, stone knife and scraper forms amid sparse scatter of flakes, lithic fragments and petrified wood, sherds and ostrich eggshell fragments, on silcrete. (FP2000-06.5) [2000]. **PAST**

FJJ 044 Lithics scatter, occupation? 26°33.19/13°18.15
Mid-Holocene flakes, projectile point, knife, blade fragments and other lithic fragments; sherd and ostrich eggshell fragments, on sand. (FP2000-06.6) [2000]. **E-MPAST**
***Ills: AF 2*, Fig. 42.4.**

FJJ 045 Lithics scatter, occupation? 26°33.16/13°18.00
Sparse flake scatter, ostrich eggshell fragments and potsherds, on sand. (FP2000-06.7) [2000]. **PAST**

FJJ 046 Marabout tomb 26°33.12/13°17.78
Marabout tomb. (FP2000-06.8) [2000]. **ISLAM-EMOD**

FJJ 049 Lithics artefact, occupation 26°30.93/13°15.57
Acheulean biface and scatter of potsherds on indurated surface beneath sand on top of escarpment outcrop in sheltered E-facing overhang. (FP2000-07.1) [2000]. [**PAL**]

FJJ 050 Lithics scatter 26°29.32/13°15.34
Mid-Holocene scatter of lithics flakes and blades with bilaterally notched blade, stone knife and scraper forms and two coarse potsherds, on sand. (FP2000-07.2) [2000]. **PAST**

FJJ 051 Lithics scatter 26°27.24/13°17.87
Pleistocene lithics scatter with Aterian tanged scraper and two Acheulean/Mousterian bifaces on sand between rock outcrops. (FP2000-07.3) [2000]. **PAL**

FJJ 052 Lithics scatter 26°27.25/13°18.07
Pleistocene lithics scatter on sand and gravels. (FP2000-07.4) [2000]. **PAL**

Figure 18.32. FJJ 056, Qaṣr Fjayj, looking W (photo: CMD 1965).

Figure 18.33. FJJ 056, detail of loopholes (for musketry?) (photo: FP 2000).

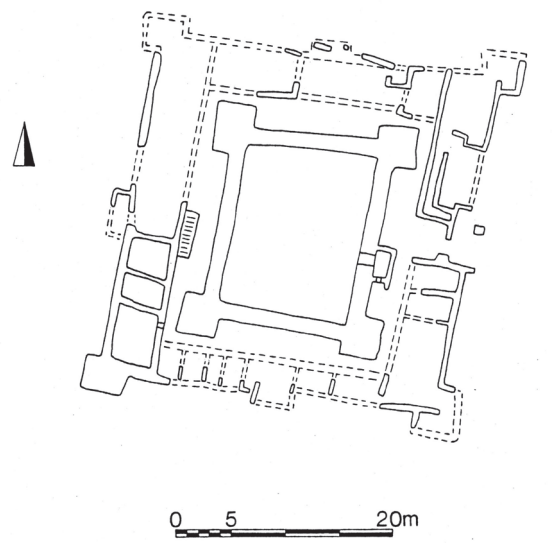


Figure 18.34. FJJ 056, plan of qasr *structure (CMD/FP).*

FJJ 053 Lithics scatter 26°26.93/13°20.45
Pleistocene lithics scatter on sand. (FP2000-07.5) [2000]. **PAL**

FJJ 054 Lithics scatter 26°26.93/13°21.44
Pleistocene lithics scatter on sand and gravels. (FP2000-07.6) [2000]. **PAL**

Figure 18.35. FJJ 056, plan of qasr *and enclosures and mudbrick wall lines of associated settlement (FP 2000).*

FJJ 056 *Qasr*, settlement, enclosures 26°32.16/13°17.99

This large well-preserved mudbrick *qasr* still stands over 7m high in places (apparently the structure recorded by Ziegert 1969, 53 and Taf. IIIB). It consists of an outer wall *c.*33m square and had projecting square towers at each corner, and at the centre of each side.

In the centre of the *qasr* is a square structure, *c.*18m square with projecting angle towers and an additional tower on the E wall, probably to protect the entrance, and/or to cover the outer gateway which also appears to have been located in the E wall. The structure is built of yellow mudbricks bonded with a darker clay, laid on a foundation of *c.*4 courses of rough stone.

The central tower was surrounded by a range of rooms built onto the outer curtain wall; much decayed by 2000. On the W side there are the remains of a stairway giving access to the top of the range of rooms, and enabling the outer wall to be manned. In the surviving walls, occasional traces of windows survive. At regular intervals along the S wall, and its towers, all at ground level, is a row of small square holes. In the S face of the SW tower of the central building, *c.*5m above the ground, is a similar pair of windows. Two rows of holes occur in the S half of the W curtain wall, the upper row are roughly circular, and the lower triangular. Round the SW corner the bedrock has been cut away to form a dry ditch some 2m deep.

Outside the *qasr* are the sand-covered remains of a what is probably a small settlement. Surface indications indicate several mudbrick buildings on the N and E side of the *qasr* with several larger enclosures to the W. The site has yielded some Garamantian pottery and would repay more detailed investigation, concerning its origins. There are also a few residual lithics from the site, including an Aterian piece.

CGAR, *LGAR, ISLAM-EMOD* [PAL]

***Ills: AF 1*, front cover; *AF 2*, Figs 18.32-18.35, 42.2.**

SECTION 19. LĀRKŪ [LARCU] (LAR)

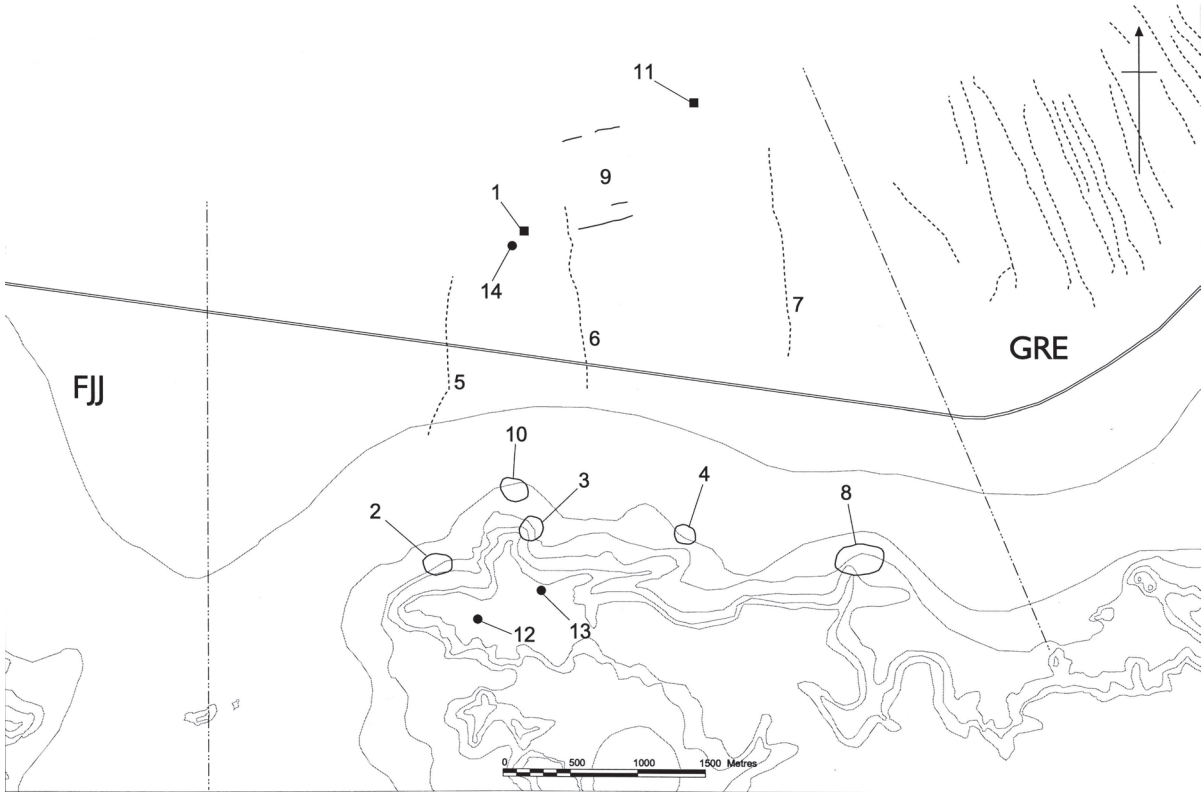


Figure 19.1. Map of sites in Lārkū sector (CMD/FP).

Lārkū forms the E end of the plain running between the Fjayj headland and al-Qsīr (Leksair) headland, N of the Bāb al-Maknūsa pass which links the Wādī al-Ḥayāt to Murzuq and the southern oases. No early modern settlements of any size are recorded here. The area is best known for the prominent stone-built *qasr*, commonly referred to as 'Gasr Laroccu', noted by Caputo (Pace *et al.* 1951, 218-220) and possibly investigated by Ayoub. The Wādī centre to the W of that site appears to have been empty of cultivation or settlement in the 1950s and the *qasr* area lay among the gardens of a small oasis settlement (Fig.19.8). Qaṣr Lārkū was first visited and recorded by CMD in 1958, with further survey in 1971.

No survey was carried out along the escarpment edge by CMD, but several cemeteries were identifiable on the AP coverage. A sample of these were visited and recorded in 2000. This area, with only three widely spaced foggaras, contrasts markedly with that immediately to the E in al-Qrāya, where the highest density of foggaras anywhere in the Wādī has been recorded. On the escarpment edge, there are also very few dispersed cairns which become increasingly abundant to the E towards al-Qsīr. The main cemeteries here are the two substantial nucleated sites (LAR 003, LAR 010) of 'classic Garamantian' type.

***Ills: AF 1*, 245; *AF 2*, Figs 19.1, 19.5, 19.8.**

LAR 001 *Qasr* 26°32.40/13°21.81

Qaṣr Lārkū is unique in being the only Garamantian *qasr* in the al-Ajāl so far found, built of stone. It is a fortified site, approximately 18m square with external angle towers, and is built of well-laid courses of stone, bonded with lime mortar.

Much is now in ruin, but the SW corner still stands to over 8m in height. The building is also exceptional in the construction of its curtain wall, which appears to consist of two faces of stone approximately 2m apart containing a central packing of sand and small rubble. The stones of the faces are dressed both front and back and do not tail into the core as is common in Roman masonry.

In the middle of the E wall is a small gateway. This is approximately 2m x 2m in size, tapering towards the lintel. The passage walls of the doorway are stone faced, and two large lintels remain in position above. In its original state there must have been 4 such slabs. The interior, whose present surface stands c.2m above the outside ground, is empty of buildings except for 2 dilapidated modern byres. A square stone-lined well in the courtyard is clearly ancient, D:9.1m with an opening 48cm square. Externally any trace of outlying buildings that may have existed is lost under the modern oasis where there is now a substantial village N and NE of the *qasr*. Small quantities of imported pottery were found in and around the *qasr*, including ARS and TRS, 2nd-5th/6th century AD.

Figure 19.2. LAR 001, Qaṣr Lārkū from SE (photo: CMD 1958).

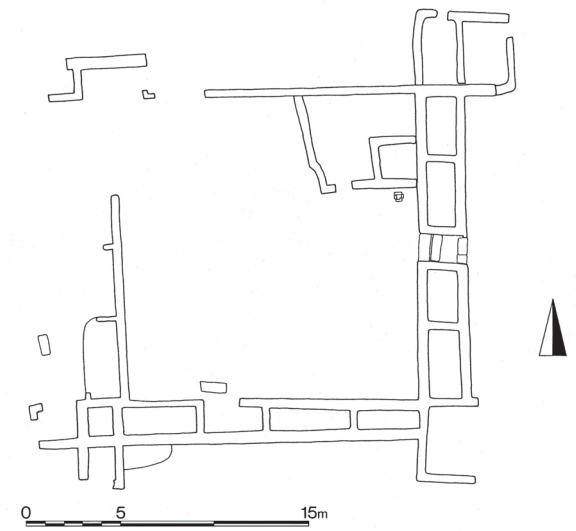


Figure 19.3. LAR 001, plan of Qaṣr Lārkū (FP 2000).

Figure 19.4. LAR 001, doorway on E side (photo: CMD 1958).

[1958, 1965, 1971, 2000]. **PUGAR, GAR, LGAR** ***Ills: AF 1*, 148, 152-53, 255; *AF 2*, Figs 19.2-19.5.**

LAR 002 Cemetery? 26°31.30/13°21.40
Few dispersed low cairns on escarpment slopes. Unconfirmed. **CGAR**

LAR 003 Cemetery 26°31.36/13°21.83
Compact Type 4 nucleated cemetery *c.*85-100 type 2b shaft graves (sand-filled and ringed by rubble) to E of LAR 010, at escarpment base. One stele *in situ* on E side of tomb. Surface pottery common, including ARS and TRS, 4th-6th century AD. [2000]. **CGAR, LGAR** ***Ills: AF 2*, Figs 19.6-19.7.**

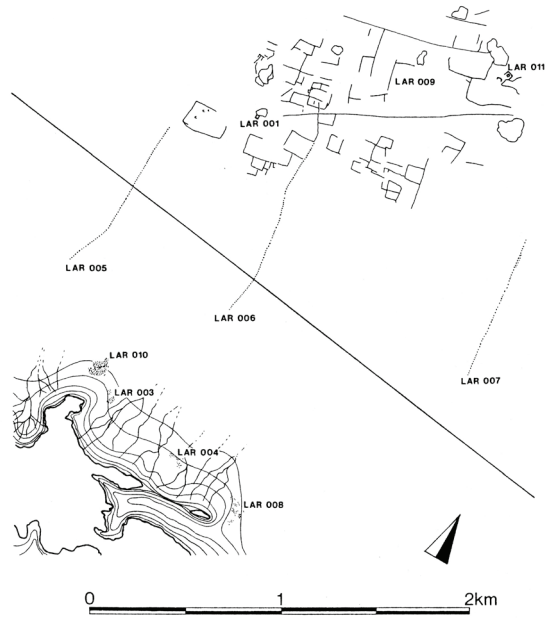


Figure 19.5. General plan of Lārkū area, plotted from AP coverage, showing foggaras and fields/enclosures possibly associated with LAR 001 (FP 2000).

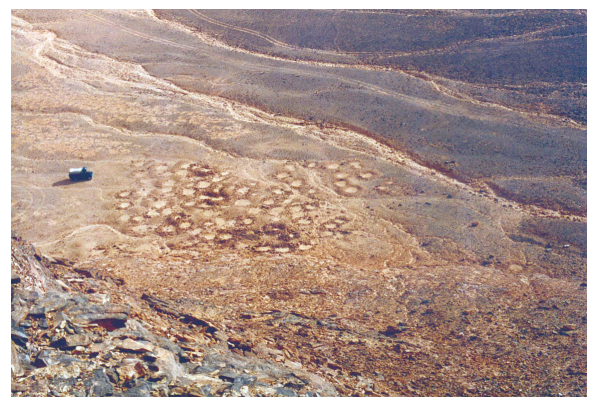


Figure 19.6. LAR 003, nucleated cemetery of shaft burials (photo: FP 2000).

Figure 19.7. LAR 003, type 2a shaft burial (photo: FP 2000).

Figure 19.8. LAR 009, view of field system looking E towards Lārkū oasis (photo: CMD 1958).

Figure 19.9. LAR 009, ruined hut located within field/enclosure system (photo: CMD 1971).

Figure 19.10. LAR 010, dense nucleated cemetery of shaft burials, plotted from air photograph. Individual burials are 1-2m diameter (FP 2000).

LAR 004 Cemetery 26°31.40/13°22.40
Small group of dispersed cairns on escarpment edge, 10-20 maximum. Possibly unrobbed. No ground visit. ***LPAST? GAR?***

LAR 005 Foggara 26°32.00/13°21.50
Foggara running to SW edge of Qaṣr Lārkū complex, up to 1.2km long. Still traceable in 2000 as mounds of gravely spoil, as far as just W of Qaṣr Lārkū. Plotted from APs. [2000]. ***GAR***
***Ills: AF 1*, 245-46, 255.**

LAR 006 Foggara 26°32.00/13°21.90
Foggara running into central area of Qaṣr Lārkū complex. Length *c.*1.4km, plotted from APs, still visible in 2000 as modern field boundaries. [2000]. ***GAR***
***Ills: AF 1*, 245-46, 255.**

LAR 007 Foggara 26°32.10/13°22.70
Foggara running to E side of Qaṣr Lārkū complex. Length *c.*1.6km, plotted from APs. Visible in 2000 running along modern field boundaries. [2000]. ***GAR***
***Ills: AF 1*, 245-46, 255.**

LAR 008 Cemetery 26°31.20/13°23.20
Group of dispersed cairns on escarpment slopes. Estimated 25-35. No ground survey. ***LPAST? GAR?***

LAR 009 Field system, enclosures 26°32.70/13°22.00
An extensive field system and series of enclosures around Qaṣr Lārkū were surveyed by CMD who thought they might be Garamantian. While no substantial settlement remains were identified, some isolated ruined structures were found to the S and SE of the *qasr*, although their date remains unknown. While a thin spread of Garamantian period pottery was recovered across much of the area, the date of the systems remains uncertain and they may be of more recent date. Much of them have been destroyed and masked by the expansion of modern Lārkū, but some elements remain in use. The owner of the farm and land around the *qasr*, Abdelqadir Salih, reported that his family came from Marrakesh *c.*500 years ago as missionaries to spread Islam. The field systems were said to be *c.*300 years old, and to not relate to the three foggaras LAR 005-007. **GAR? *ISLAM-EMOD?***
***Ills: AF 1*, 255; *AF 2*, Figs 19.5, 19.8-19.9.**

LAR 010 Cemetery 26°31.24/13°31.71
Large Type 4 nucleated cemetery, estimated *c.*150-200 shaft graves on escarpment edge. Tightly packed type 2b graves, compact honeycomb cluster of sand-filled pits surrounded by stone rubble. Traces of cist substructures visible in some graves but no upstanding superstructures survive. Several examples of stele *in situ* on E side of tombs, 'horns' and small squarish offering tables. Surface pottery common included ARS, amphorae and some handmade wares, 2nd-5th/6th century AD. [2000]. **CGAR, LGAR**
***Ills: AF 1*, 214; *AF 2*, Figs 19.10-19.14.**

Figure 19.11. LAR 010, type 2b stone-lined shaft burial (photo: FP 2000).

Figure 19.12. LAR 010, type 2a shaft burial, with type 4a stele on E side (photo: FP 2000).

Figure 19.13. LAR 010, robbed or crater cairn (photo: FP 2000).

Figure 19.14. LAR 010, irregular offering table, type 4b/4f (photo: FP 2000).

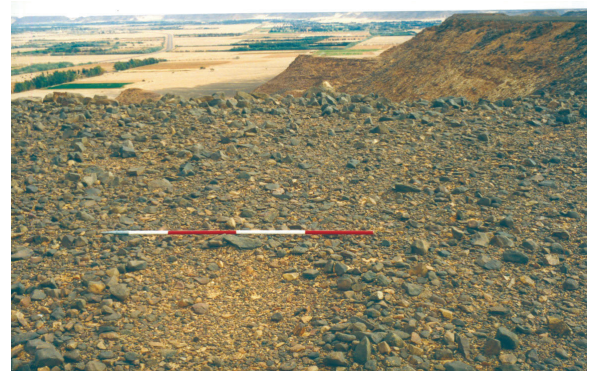


Figure 19.15. LAR 013, location of lithics scatter on hamada top by subcircular scooped areas (FP 2000).

LAR 011 *Qasr*, enclosed settlement? 26°33.10/13°22.40

Probable *qasr* site with outer enclosure wall around square central core structure. Recorded from AP coverage only. No records of ground survey. Located at E side of system of fields/enclosures which extend to LAR 001. Not located in 2000 and probably within modern date palm plantations. ***GAR-EMOD?***

***Ills: AF 1*, 255.**

LAR 012 Lithics scatter 26°31.10/13°21.58

Scatters of Palaeolithic material, probably associated with subcircular scooped activity areas on Hamada top. [2000]. PAL

LAR 013 Lithics scatter 26°31.21/13°21.83

Scatters of Palaeolithic material, probably associated with subcircular scooped activity areas on Hamada top. [2000]. PAL

Ills: AF 2, Figs 19.15.

LAR 014 Well 26°32.30/13°21.70

A well just to the SW of LAR 001 is still in use, although water is now pumped from a depth of 15m the owners reported that it used to be only 6m deep, when water was drawn by animals; the old animal walk to the S side has been converted into a set of access steps. The remains of three different wooden pulley superstructures survive. The upper part of the well shaft is revetted with stones reused from the *qasr*. [2000]. ***ISLAM-EMOD?***

SECTION 20. AL-QRĀYA [EL-GHEREIA] (GRE)

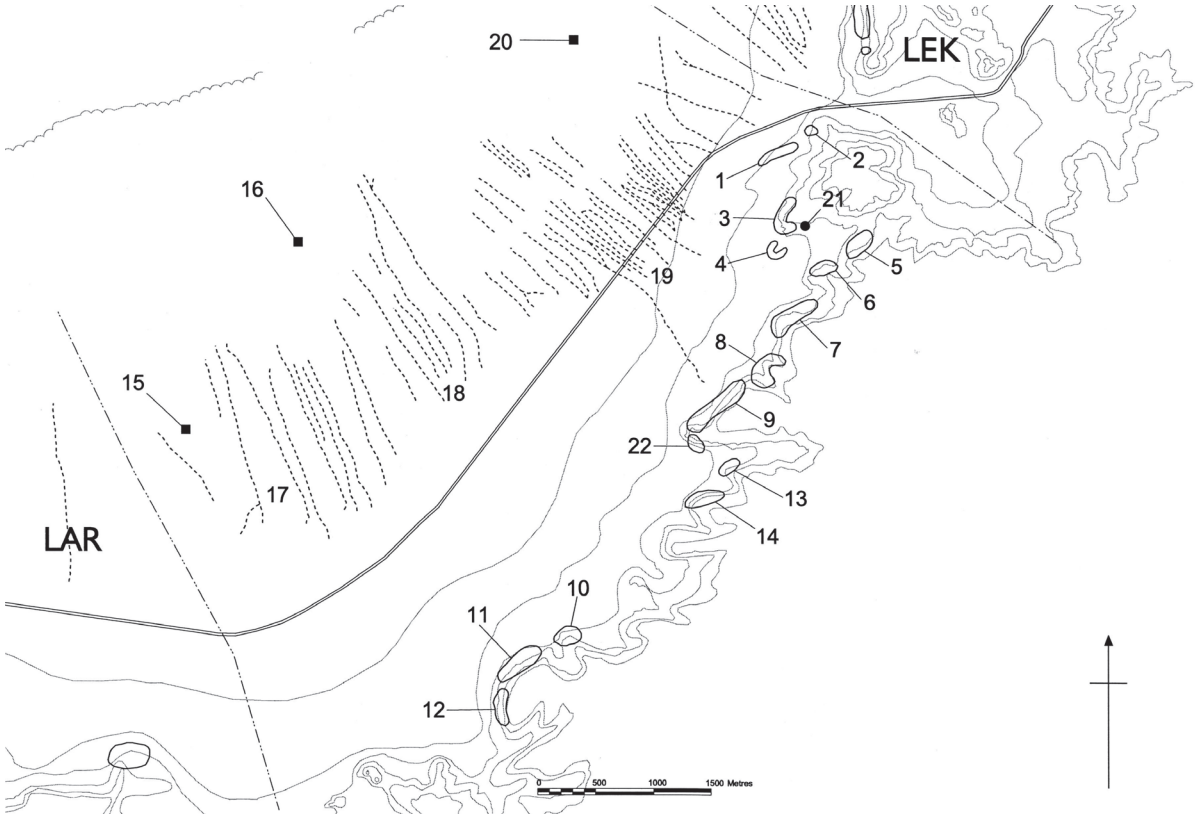


Figure 20.1. Map of sites in al-Qrāya sector (CMD/FP).

The area of al-Qrāya (previously el-Ghereia or Graia) forms the E part of the Wādī between the Fjayj and al-Qsīr headlands. The early modern village of al-Qrāya was evidently a miserable place in the 1930s, but had several even smaller settlements dependent on it (Scarin 1937b, 623 – 265 inhabitants, 3,000 date palms). With the exception of few burials excavated by the Italians (Pace *et al.* 1951, 376-77, perhaps GRE 002 or 010) and by a French team in the 1950s (Bellair *et al.* 1953, 89-92), this area was first reconnoitred by CMD in April 1971 and April 1973, but systematic survey of the escarpment edge was limited to the E end of the area, on the edge of al-Qsīr. During 2000 it was found that large-scale agricultural schemes now cover the E side of the embayment S of the road, extending to near the escarpment edge. Further ground survey was carried out in the Wādī centre, although large plantations and expanding settlement around al-Qrāya now mask large areas. The escarpment cemeteries were not resurveyed and the identification of sites there is based largely on the AP record.

This area contains the densest concentrations of foggaras in the whole valley; CMD (Daniels 1970a, 17) noted some 60 foggaras over a distance of *c*.6km (groups GRE 017-019 and LEK 004). Almost all traces of these have now been obliterated by the modern agriculture, which, by a parallel coincidence, seems here to be particularly intensive. ***Ills: AF 1*, 246; *AF 2*, Fig. 20.1.**

GRE 001 Cemetery 26°34.10/13°26.30
Large Type 3 cemetery in small embayment with several possibly distinct components. Main group (A) to E of gully, with extension (B) to W. Second group (C) further W, with some type 5b stepped tombs (E) above it. A few graves (D) running up hillside, with some exposed skeletons noticed, towards a small col.

Area A contained the remains of some large cairns of various types, and some possible rectangular stepped tombs. Surface finds included an offering table, much pottery and some faience. Area B is an extension of A, across a gully, where tombs appeared smaller. Area C formed the rest of the wadi-floor cemetery with scattered graves in two or more groups to the W. Surface finds include offering tables, ARS and TRS. Area D was located on the escarpment to the S. Some disturbed skeletons, including complete skulls in evidence. The most prominent part of the site was in Area E, an area of stepped rectangular tombs on the hill terrace above Area C. This included 20+ well-preserved tombs, with many stele and some surface pottery, including ARS and TRS, late 1st-5th century AD. [1971]. **CGAR, LGAR, [ISLAM]**
***Ills: AF 2*, Fig. 20.2.**

GRE 002 Cemetery 26°34.20/13°26.50
Small Type 4 nucleated cemetery to E of GRE 001 on escarpment edge and running up hillside. Graves are mainly type 2b shaft burials outlines with stone rings and most lack superstructures, and survive mainly as sand-filled circular pits, though some rectangular built tombs (type 4b?) were noted. Some have unusual feature of groups of three orthostats, commonly, but not always, on the E side. These may well have been covered with roughly circular stone slabs. Pottery includes ARS and TRS, 2nd-5th century AD. [1971]. CGAR, LGAR
***Ills: AF 2*, Figs 20.3-20.5.**

GRE 003 Cemetery 26°33.80/13°26.30
Dispersed Type1/2 cairn cemetery along the escarpment edge around headlands. In some areas, cairns run along foot of escarpment, while other groups run up slopes. Identified from APs, not surveyed on ground. CGAR, LGAR

GRE 004 Cemetery 26°33.60/13°26.30
Scatter of cairns around base of isolated hillock. Identified from APs, not surveyed on ground. ***LPAST? GAR?***

GRE 005 Cemetery? 26°33.70/13°26.60
Possible small cemetery of cairns on slopes of isolated hillock within embayment. Identified from APs, not surveyed on ground. ***LPAST? GAR?***

GRE 006 Cemetery 26°33.50/13°26.50
Dispersed Type 2 cemetery of 75-100 cairns on escarpment slope on S side of embayment. These form a discrete group with large empty areas on both sides. Identified from APs, not surveyed on ground. ***LPAST? GAR?***

GRE 007 Cemetery 26°33.30/13°26.30
Dispersed cairnfield of 50-75 graves on escarpment slopes. Identified from APs, not surveyed on ground. ***LPAST? GAR?***

GRE 008 Cemetery 26°33.10/13°26.20
Dispersed cairnfield on escarpment slopes around headland. Estimated 100-150 graves. Near unbroken spread with GRE 009. Identified from APs, not surveyed on ground. ***LPAST? GAR?***

GRE 009 Cemetery 26°33.00/13°25.90
Dispersed cairnfield 100-150 graves on NW facing escarpment slopes, continuing around headland at S end. Identified from APs, not surveyed on ground. ***LPAST? GAR?***

GRE 010 Cemetery 26°31.90/13°25.30
Nucleated cemetery at escarpment base below headland. Estimated *c.*50 graves. Note that few cairns on upper slopes in this area. Identified from APs, not surveyed on ground. ***PUGAR? CGAR?***

Figure 20.2. GRE 001, type 5 stepped tombs in area D (photo: CMD 1971).

Figure 20.3. GRE 002, cemetery of shaft graves from above (photo: CMD 1971).

Figure 20.4. GRE 002, element of rectangular superstructure among shaft graves (photo: CMD 1971).

Figure 20.5. GRE 002, type 2b shaft grave with stone 'tripod' and broken slab on E side (photo: CMD 1971).

Figure 20.6. GRE 015, S wall of qasr*, from SE (photo: FP 2000).*

Figure 20.7. GRE 015, interior looking S across well (photo: CMD 1971).

Figure 20.8. GRE 015, interior looking NW (photo: FP 2000).

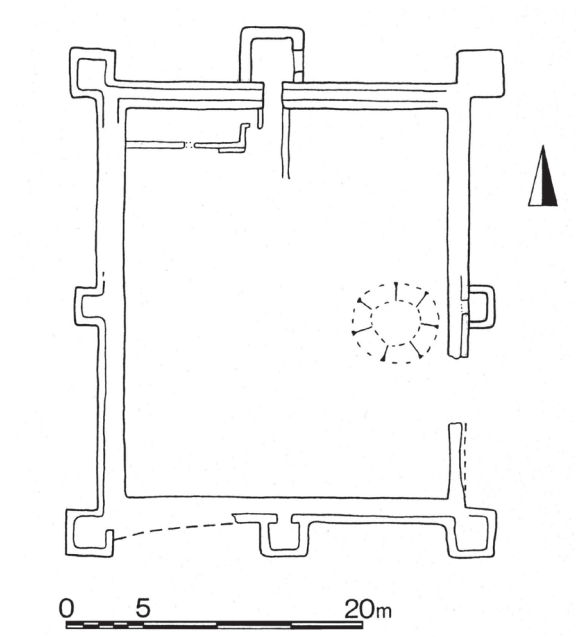


Figure 20.9. GRE 015, large qasr*, sketch plan (FP 2000).*

GRE 011 Cemetery 26°31.70/13°25.10
Small nucleated cemetery at escarpment base around small detached hillock, to SW of GRE 010. Identified from APs, not surveyed on ground. ***PUGAR? CGAR?***

GRE 012 Cemetery 26°31.60/13°24.90
Small nucleated cemetery at escarpment base. Identified from APs, not surveyed on ground. ***PUGAR? CGAR?***

GRE 013 Cemetery 26°32.60/13°26.00
Cairnfield on escarpment slopes on S side of embayment. These form a relatively discrete group on the slopes near the embayment entrance. Estimated 50-75 graves. Identified from APs, not surveyed on ground. ***LPAST? GAR?***

GRE 014 Cemetery 26°32.50/13°20.50
Dispersed cairnfield on escarpment slopes SW of GRE 013. Estimated 50+ tombs. The spread of tombs does not extend to SW as far as headland. Identified from APs, not surveyed on ground. ***LPAST? GAR?***

GRE 015 *Qasr* 26°32.74/13°23.38
Large rectangular mudbrick fortified site, *c.*25 x 30m. Substantial rebuilds in stone and mud apparent in S wall and large gap in E wall. Original entrance through gate tower on N wall (Ruprechtsberger 1997, 80).

Internal structures largely destroyed. Enclosed parapets/walkways at first floor level provided access to towers, but these are only well preserved on the N wall. Many sockets in the interior walls probably relate to the roofing of internal structures, built onto the main enclosure wall. There is a large well in E side of courtyard. [1971, 2000]. ***ISLAM-EMOD?***
***Ills: AF 1*, 148; *AF 2*, Figs 20.6-20.9.**

GRE 016 *Qasr*? 26°33.70/13°23.80
Probable *qasr* site, identified on APs. Not locatable during 2000 and remains unconfirmed. ***GAR-EMOD?***

GRE 017 Foggara Group 26°32.60/13°23.60
Cluster of eight channels running deep into Wādī centre, across a front of *c.*900m. The APs show two of the foggaras with short feeder tributaries. Longest example *c.*1.8km. The westernmost foggara runs past the *qasr* at GRE 015

but no relationship could be established. By 2000 the channels were much eroded in agricultural areas although several lengths of spoil mounds survive. The westernmost channel runs past SW corner of GRE 015 and it then disappears under modern fields. ***GAR***
***Ills: AF 1*, 246.**

GRE 018 Foggara Group 26°33.10/13°24.70
Cluster of *c.*10 channels running deep into Wādī centre, across a front of *c.*1.2 km. Longest example *c.*2km. Plotted from air photographs; now (2000) largely destroyed or masked by settlement and development around al-Qrāya. ***GAR***
***Ills: AF 1*, 246.**

GRE 019 Foggara Group 26°33.90/13°25.40
Very dense cluster of *c.*34 foggara channels in *c.*2 km, some traceable from the escarpment edge, 1-2.5km long. Five had tributary feeders, and towards the E end of the group one foggara crosses the line of another, but otherwise they generally run parallel, with little braiding. Almost no trace of any of them could be seen under modern agriculture on a revisit in 2/2000. ***GAR***
***Ills: AF 1*, 246.**

GRE 020 *Qasr*? 26°34.70/13°24.80
Possible *qasr* site identified on APs. Not located on ground or otherwise confirmed. ***GAR-EMOD?***

GRE 021 Escarpment settlement? 26°33.80/13°26.40
Ragged wall on hillside above GRE 003, but otherwise little evidence for structures. ***EGAR?***

GRE 022 Cemetery 26°32.80/13°25.80
Large nucleated cemetery at foot of escarpment at SW end of GRE 009. Estimated 100-150 graves. Identified from APs, not surveyed on ground. ***PUGAR? CGAR?***

SECTION 21. AL-QṢĪR [LEKSAIR] (LEK)

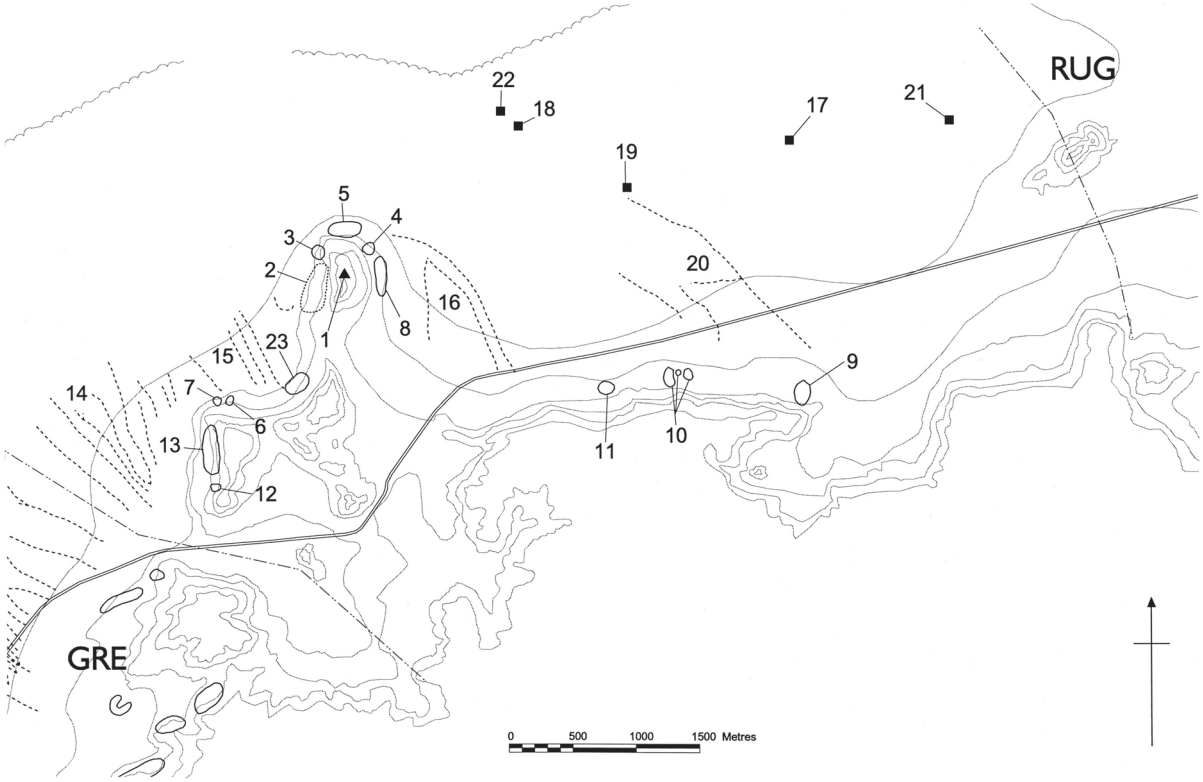


Figure 21.1. Map of sites in al-Qṣīr sector (CMD/FP).

This comprises a relatively small area around the prominent headland of al-Qṣīr (Leksair) and the escarpment to the E (Fig. 21.3). This is another nodal topographic point, where the valley narrows to under 1.5km between the edge of the sand sea and a series of rocky outliers of the escarpment. There was a Garamantian escarpment settlement situated on one of the detached rocky promontories (Fig 21.2). In the 1960s the main road ran S of the LEK 001 headland, through a gap between it and the main escarpment front (as indicated on Fig. 21.1). The modern road now runs on its N side.

The Wādī centre E of the headland, extending into ar-Raqayba, is sandy and, despite evidence for some earlier settlements and *qsur*, today remains largely unpopulated. This is reflected to the E of foggara group LEK 020, where there is a substantial gap of *c.*7.5km in the distribution of foggaras before the next group in the ar-Raqayba area. The early modern settlement of al-Qṣīr was small and dependent on the meagre village of al-Qrāya to the W (Scarin 1937b, 623).

The area is also referred to as 'el-Gasr' in some notes and appears as such on many early maps of this area. The main reconnaissance of this area was carried out in March-April 1973. Evidence was seen for some test-excavations in this area, by Ziegert, but their results have yet to be reported.

***Ills: AF 1*, 246; *AF 2*, Figs 21.1-21.3.**

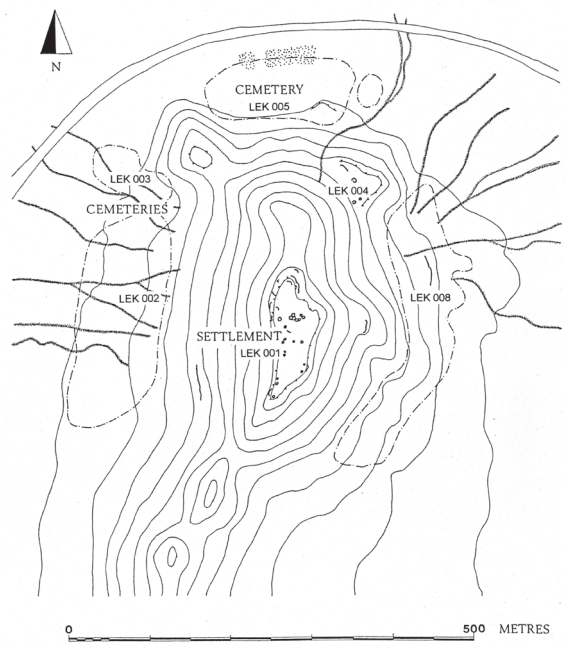


Figure 21.2. Main sites around al-Qṣīr (Leksair) headland (CMD/FP).

Figure 21.3. Headland of al-Qṣīr, from SW (photo: CMD 1973).

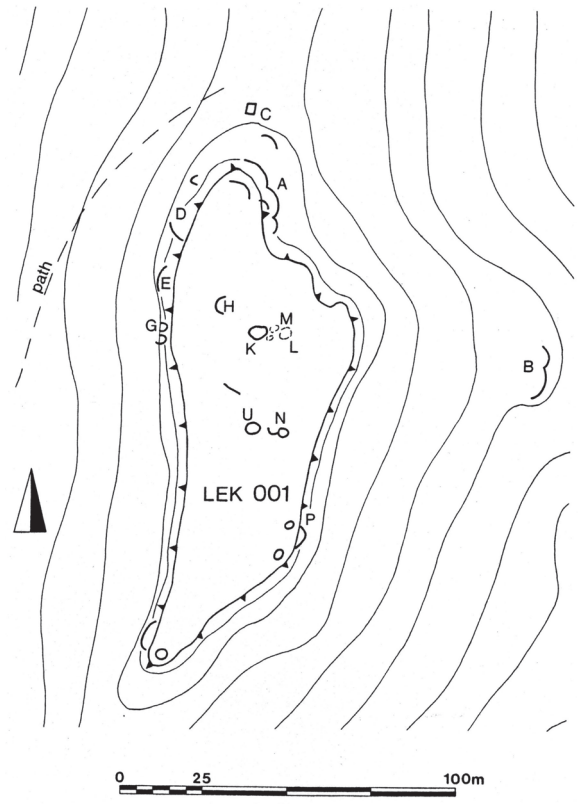


Figure 21.4. LEK 001, detail plan of hilltop settlement (CMD/FP).

Figure 21.5. LEK 001, view of hilltop buildings (photo: CMD 1973).

LEK 001 Escarpment settlement 26°35.30/13°27.30

The top of the headland was covered with traces of settlement, comprising the outlines of stone structures and small hollows, and thin spread of pottery, some, almost certainly of post-medieval or more recent date. The hilltop was reached by a path running up the W side of the hill. No detailed survey or excavations, but limited surface collections made.

Area A: terrace/platform just below the hilltop at the N end. Limited occupation debris, including a hearth and a few sherds in vicinity, <3999> and <4000>. **Area D**: platform just below hilltop with few handmade sherds, <4001>. **Area E**: small terrace just below hilltop, few sherds include jar <4002>. **Area G**: small shelter on terrace E. **Area K**: upstanding structure, overlying earlier features; thought by CMD likely to be relatively modern. Some coarse handmade wares, a tiny fragment of impressed ware, occasional lithics, handle of ZT7 jar, vessels <4003>, <4004>. **Area L**: structure to E of building K. **Area M**: scatters of sherds to N and E of structures K-L; possibly of several periods. Some possibly 'early' material similar to material from Zinkekrā <4040>, possible Roman-period imports, abraded possible RS and a green-glazed sherd. Occasional lithics and fragments of ostrich eggshell also noted. **Area N-U**: subcircular habitation areas, with sherds of coarse handmade wares and jar <4005>. **Area P**: shelter on platform on edge of hilltop, with very coarse handmade pottery.

Some coarse 'Berber' sherds were also noted on the path up to the summit E side, mainly wall sherds except <4006>. [1971, 1973]. **LPAST, EGAR, PUGAR?, CGAR, ISLAM, EMOD**

***Ills: AF 1*, 141; *AF 2*, Figs 21.2-21.6.**

LEK 002 Escarpment settlement 26°35.30/13°27.20

Settlement area at the foot of the W side of the al-Qṣīr promontory, below LEK 001. Site consists of many small settlement platforms and small terraces built into the lower hillside. Considered similar to the Ikhlif (CLF 008/010)) settlement although it lacked any enclosure wall and appeared more eroded, while also being masked in blown sand. Some damage to site by vehicle tracks. Little surface pottery. A diagonal path leads up the W slope to the top, with at least one further terrace constructed about half way up the hillside. Dating, see LEK 001.

***Ills: AF 2*, Figs 21.2, 21.7-21.8.**

LEK 003 Cemetery 26°35.40/13°27.20

Small Type 4 nucleated cemetery on the W end of the headland proper, mainly comprising type 2b shaft burials defined by rings of rubble. Occasional surface pottery and an offering table noted. [1971, 1973]. ***CGAR***

***Ills: AF 2*, Figs 21.2, 21.9.**

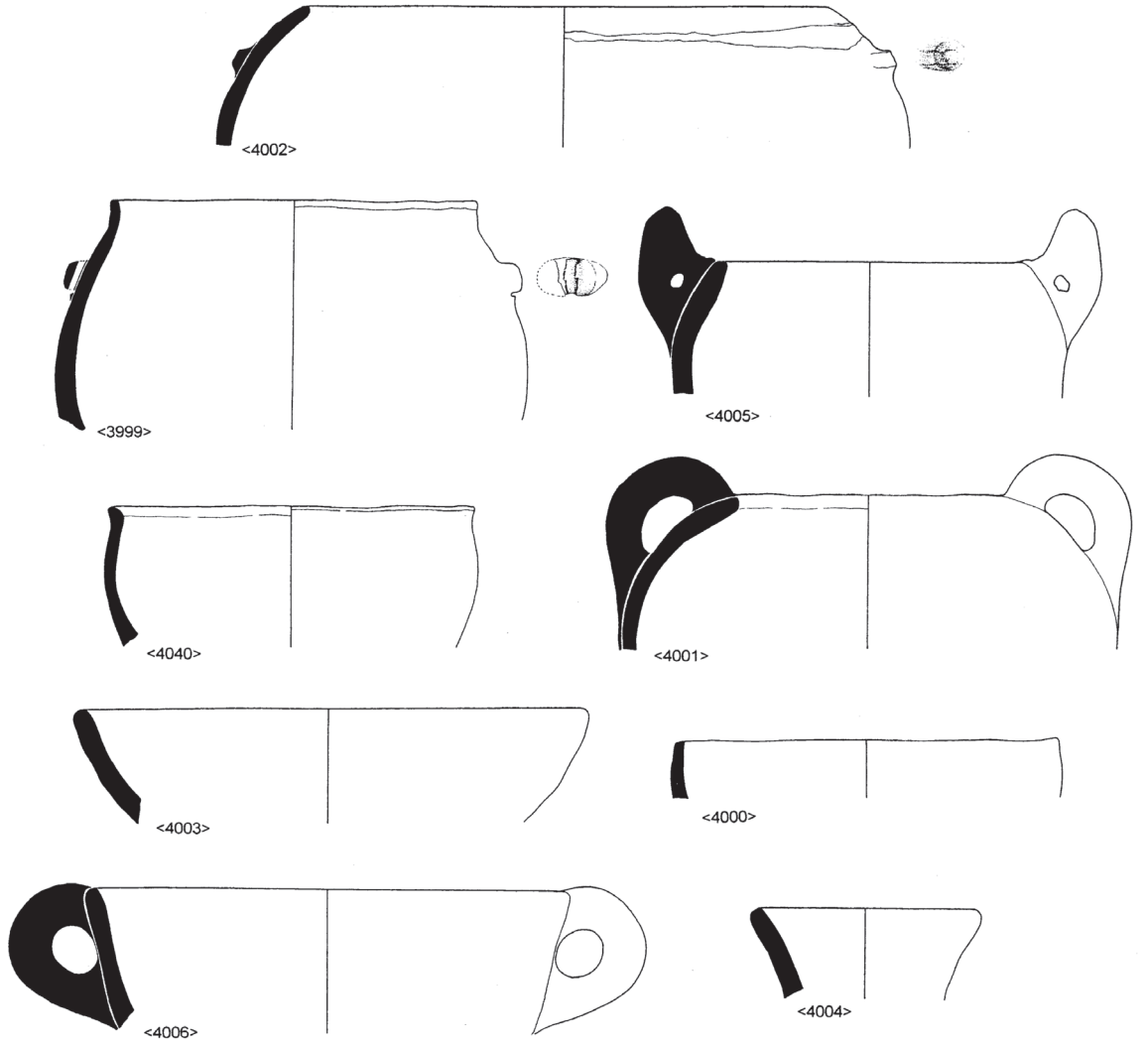


Figure 21.6. LEK 001, pottery forms from hilltop settlement (CMD/FP).

Figure 21.7. LEK 002, building platforms near base of escarpment settlement (photo: CMD 1973).

Figure 21.8. LEK 002, building platform (photo: CMD 1973).

Figure 21.9. LEK 003, cemetery, from above (photo: CMD 1971).

Figure 21.10. LEK 004, cairns and other structures, including possible desert mosque, with niche for mihrab (photo: CMD 1973).

Figure 21.11. LEK 006, robbed cairn in area A, with stone bowl. Area C behind (photo: CMD 1973).

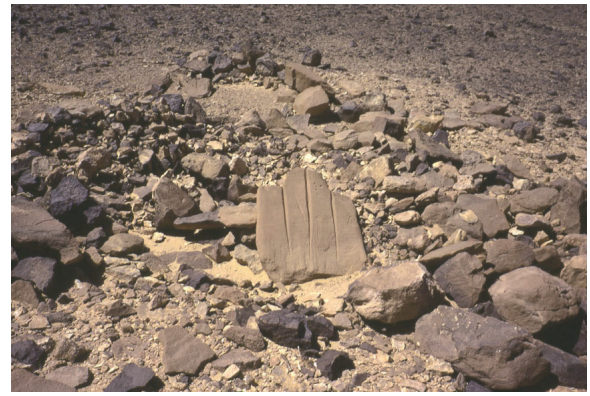


Figure 21.12. LEK 006, displaced type 2c stele in area C (photo: CMD 1973).

Figure 21.13. LEK 006, shaft burial with setting of three small orthostats on right, in area C (photo: CMD 1973).

Figure 21.14. LEK 006, two orthostats and round stone slab by shaft grave (photo: CMD 1973).

LEK 004 Cemetery, mosque? other structures **26°35.50/13°27.40**

Small group of low mound cairns on a small terrace on the E slopes of the headland. This terrace has then had stone structures built on it at some later date, including what looks like a 'desert mosque'. ***LPAST? GAR?***
***Ills: AF 2*, Figs 21.2, 21.10.**

LEK 005 Cemetery **26°35.50/13°27.30**

Nucleated cemetery on the NE basal area of spur; by 1971 almost totally destroyed by bulldozing. A few handmade sherds found, and one half uncovered skeleton. One small group of graves on the E side had escaped, with part of a stele *in situ*. [1971, 1973]. ***CGAR***

LEK 006 Cemetery **26°34.90/13°26.80**

Type 3 or 4 cemetery on N-facing escarpment slopes, E of LEK 007. Three main groups of graves. In Area A, *c.*50 tombs, including type 3a low drum cairns, type 2b shaft burials and type 1 small mound cairns over stone-lined cists. Some crudely pecked stone bowls. Several graves had previously been excavated. A small group of cairns lay in

Figure 21.15. LEK 007, shaft graves, rectangular cairn and type 2c 'hands' (photo: CMD 1973).

Figure 21.17. LEK 009, example of a 'double' rectangular superstructure (photo: CMD 1973).

Figure 21.16. LEK 009, general view over site, looking W (photo: CMD 1973).

Figure 21.18. LEK 009, displaced type 2a 'hand' (photo: CMD 1973).

Area B, above Area A. Some surface pottery noted here. The western group (Area C) had an estimated 40 graves, with two examples of type 2 'hand' stele. [1973]

Several graves have unusual features, with settings of three small orthostats, with subcircular slabs, which probably originally sat on the uprights. Most of these features sited on E side, but *c.*25 percent on W side. ***PUGAR,*** **CGAR**
Ills: AF 2**, Figs 21.11-14.**

LEK 007 Cemetery 26°34.90/13°26.60
Large type 3 nucleated cemetery of *c.*100 tombs to W of LEK 006. Most are type 2b stone-lined shaft graves, but some elements of type 4a rectangular flat-topped cairns survive on N edge. Several examples of triple orthostat settings. Fragments of hands and offering tables including a crude 'two-hole' table. [1973]. **CGAR**
Ills: AF 2**, Fig. 21.15.**

LEK 008 Cemetery 26°35.30/13°27.40
Type 1 dispersed cemetery on E slope probably prehistoric, as consists of a big spread of tomb cairns. Mostly not destroyed, but probably robbed. [1973].
LPAST? GAR?

LEK 009 Cemetery 26°34.85/13°29.24
Large Type 3 nucleated cemetery divided by small gully, with a detached section to E, mainly of sandfilled shaft burials. Parts of cemetery have been heavily robbed. There are elements of large rectangular type 4b superstructures in places as well as of type 3a flat-topped drum cairns.

An example of what appears to be a 'double' tomb with two rectangular structures sharing a central wall was noted. Several examples of type 2 'hands' and small rounded offering tables. In the western portion of the site there has been some excavation. [1973, 2000]. **GAR, LGAR, ISLAM**
Ills: AF 2**, Figs 21.16-21.18.**

LEK 010 Cemetery 26°35.00/13°28.70
Nucleated Type 3 cemetery with three groups of tombs on three sides of a small detached spur. In area A, on the E side of the spur, a compact group of 75-100 shaft graves, most preserved as sand-filled hollows defined by stone rings. By 1973, several graves had been excavated, while others had been robbed for stone.

On the N side of the spur was a second group of graves (area B), some of which also appeared to have been excavated. On the W side of the spur is a third compact cemetery (area C). Estimated 100 type 2b shaft graves, but also including several quite well-preserved type 5b stepped rectangular tombs. The cemetery is partly robbed. A few type 2 stele and offering tables noted; one stele with a small inscription. [1973]. ***CGAR*****, [EMOD]**
Ills: AF 1**, 320; *****AF 2*****, Figs 21.19-21.22.**

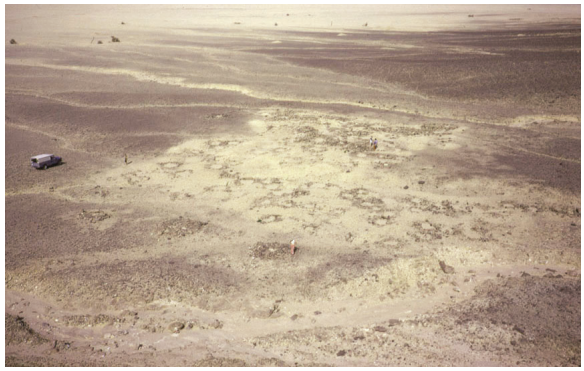


Figure 21.19. LEK 010, general view over E section of cemetery (area A), looking E (photo: CMD 1973).

Figure 21.20. LEK 010, view over W section of cemetery (area C), looking W (photo: CMD 1973).

Figure 21.21. LEK 010, rectangular stepped tombs (photo: CMD 1973).

LEK 011 Cemetery 26°35.00/13°28.40
Large Type 3 nucleated cemetery of estimated 75-100 graves including some well-preserved type 5b rectangular stepped tombs. One large example has a small stone enclosure on the E side, and the stub of a broken stele *in situ* against the E face of the tomb. This tomb was constructed of small stones, bonded with a mud mortar. There are traces of some stone robbing. Elsewhere in the cemetery cairns and shaft burials with small orthostats, with groups of three orthostats with them, similar to examples seen at LEK 006. Some type 3 'hands' and offering tables on surface. [1973]. **CGAR**
***Ills: AF 2*, Figs 21.23-21.24.**

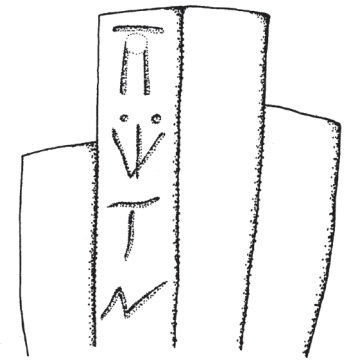


Figure 21.22. LEK 010, sketch of inscribed stele (CMD 1973).

Figure 21.23. LEK 011, rectangular stepped tomb with enclosure on E side (photo: CMD 1973).

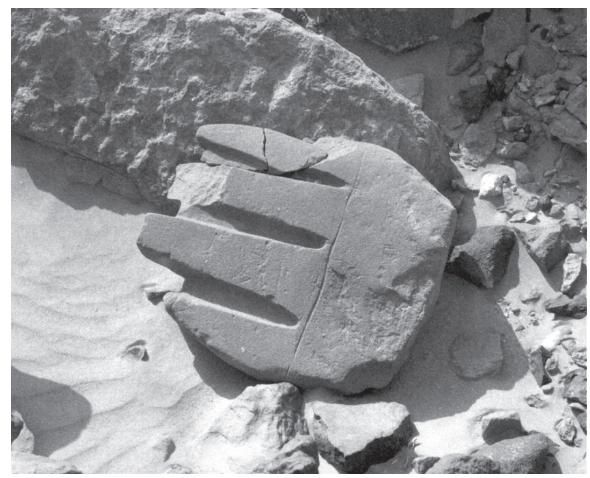


Figure 21.24. LEK 011, displaced type 3 stele. Note the setting-out line below grooves (photo: CMD 1973).

LEK 012 Cemetery 26°34.60/13°26.60
Small Type 4 nucleated cemetery below general spread of mound cairns (LEK 013). Mainly type 2b shaft graves, with evidence for relatively recent stone robbing. [1973]. ***GAR?***

LEK 013 Cemetery 26°34.70/13°26.60
Type 1 cemetery comprising large group of dispersed mound cairns on W-facing escarpment slope. Not surveyed in detail. [1973]. ***LPAST? GAR?***

Figure 21.25. LEK 017, Qaṣr Sidi Daoud, general view from SE (photo: FP 2000).

Figure 21.26. LEK 017, towers on W side looking S (photo: FP 2000).

Figure 21.27. LEK 017, interior looking N (photo: FP 2000).

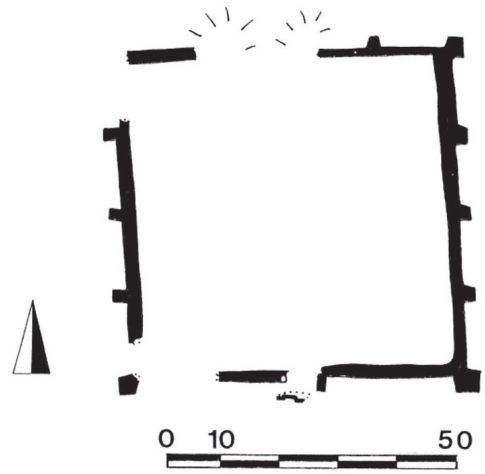


Figure 21.28. LEK 017, plan (FP 2000).

LEK 014 Foggara group 26°34.70/13°26.40
Cluster of about nine foggara channels over 750m running NW into Wādī centre, continuing major spread along Graia escarpment. Longest example *c.*1.2km long. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

LEK 015 Foggara group 26°35.20/13°26.90
Small group of three channels running N between headlands, up to 700m long. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

LEK 016 Foggara group 26°35.40/13°27.70
Small group of three channels running around E side of headland, up to 1.5km long. Lower course of channels lost but they appear to be running around headland to W. Some channels till upstanding in 2000. ***GAR***
***Ills: AF 1*, 246.**

LEK 017 *Qasr*, settlement 26°35.76/13°29.24
Qaṣr Sīdī Dāwud. Large well-preserved mudbrick *qasr* in Wādī centre, in area now largely uninhabited (Ruprechtsberger 1997, 81). Near square in plan, *c.*65m x 65m with entrance in S wall. Yellowish mudbrick (6-10 x 50 x 50cm) with very regular construction with mud mortar. Towers survive to *c.*10m high on E side. Further mudbrick buildings exist outside *qasr* on N and E sides. The preservation of the extant *qasr* may suggest that it is Islamic in date, but there is also Garamantian pottery from the site. [1971, 1973, 2000]. **CGAR, *ISLAM,* EMOD**
***Ills: AF 1*, 148, 152, 170; *AF 2*, Figs 21.25-21.28.**

LEK 018 *Qasr*, settlement, mosque, well 26°35.55/13°27.97
Qaṣr al-Qṣīr. Large upstanding *qasr* with central tower and complex of buildings around it. Constructed in mudbrick, laid mud and with some use of stone in foundations. Main walls have a pronounced batter. Internal rooms of *qasr* still have some plastered surfaces including some with painted designs (Room A – this is the site mentioned by Ziegert 1969, 53, with Taf. IIIC). Substantial settlement around the southwest and E sides of the *qasr*, with a mosque on E side of core structure. A large well within trees at NE side. An AMS date (OxA-9821: 404±32BP) suggests that the site could date back to the 15th-17th century. [1971, 1973, 2000]. **ISLAM, EMOD, ISLAM-EMOD?**
***Ills: AF 1*, 148, 174, 184; *AF 2*, Figs 21.29-21.31.**

LEK 019 *Qasr* 26°35.60/13°28.20
Qasr settlement in Wādī centre near outflow of E foggara of LEK 020 group. Identified on APs only; not located on ground. ***GAR-EMOD?***

Figure 21.29. LEK 018, from SW (photo: FP 2000).

Figure 21.30. LEK 018, main qasr *and external structures looking N (photo: FP 2000).*

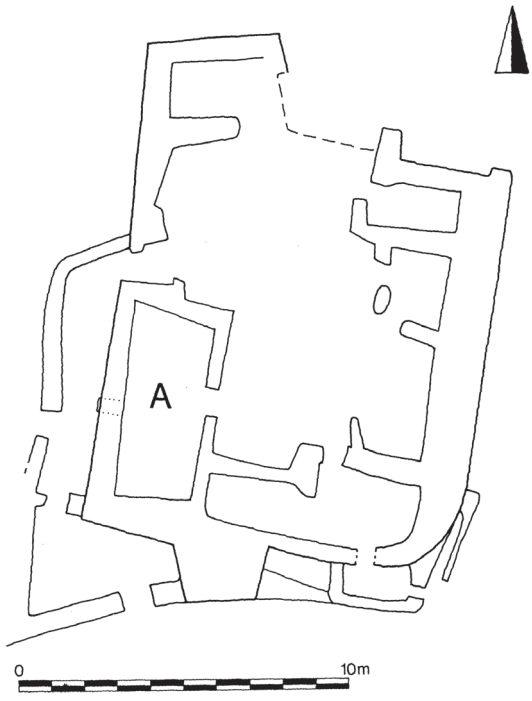


Figure 21.31. LEK 018, plan of central tower of Qaṣr al-Qṣīr (FP 2000).

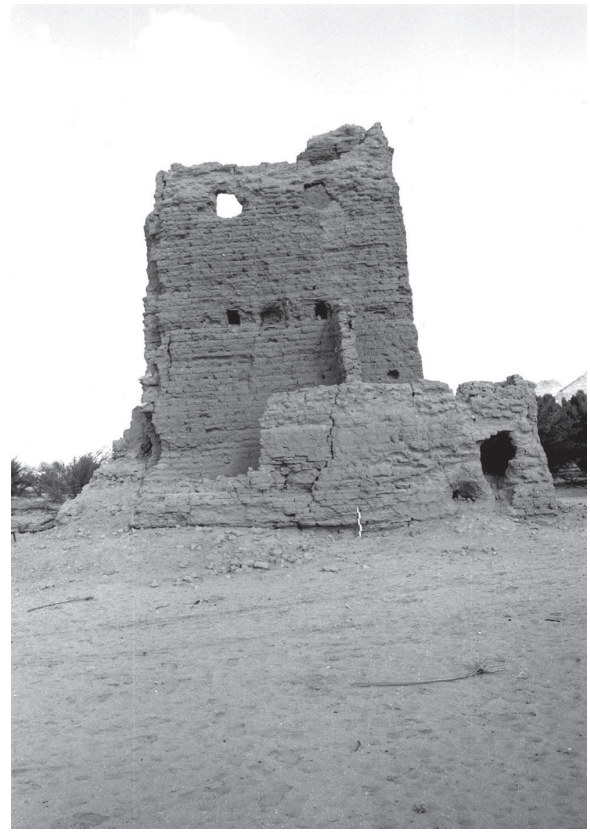


Figure 21.32. LEK 021, main tower from S (photo: FP 2000).

Figure 21.33. LEK 022, ruined qasr, *from SE (photo: FP 2000).*

LEK 020 Foggara group 26°35.20/13°28.90
Small group of three foggaras running NW towards the area of LEK 018-019. The central channel seems to have been supplemented from the E channel by means of a cross-feeder, probably in a relatively late stage of the life of this complex, when output was declining. Longest example *c.*2km long. Plotted from APs. ***GAR***
***Ills: AF 1*, 246**

LEK 021 *Qasr*, settlement 26°35.93/13°29.87
Small *qasr* with central tower within enclosure wall *c.*10 x 10m. Narrow passage around tower with stairwell on E side. Good quality mudbrick with tower surviving to *c.*7m high. Upper room divided into two rooms (*c.*2 x 4m)

with square windows facing N, S and E. Finger-smoothed plaster on walls in some areas. Entrance at S end of E wall through small raised doorway. An AMS date (OxA-9823: 1632±35BP suggests occupation at the site, though not necessarily the extant tower (which looks Islamic?), could date back to the 4th-6th century AD. [2000]. **CGAR, *ISLAM-EMOD?***
***Ills: AF 2*, Fig. 21.32.**

LEK 022 *Qasr*, settlement 26°35.67/13°27.88
Small mudbrick tower *c.*15m square located *c.*200m NW of LEK 018. Constructed of large flat bricks, leaving mound 3-4m high, with centre filled with collapsed rubble. S wall still quite well preserved with a vertical face. Traces of associated structures on N side. [2000]. ***ISLAM-EMOD?***
***Ills: AF 2*, Fig. 21.33.**

LEK 023 Cemetery 26°35.00/13°27.10
Large nucleated cemetery at escarpment base. Dispersed mound cairns on upper slopes above. Identified only from APs and not investigated on the ground. ***LPAST? GAR?***

SECTION 22. AR-RAQAYBA [RUGHEIBAH] (RUG)

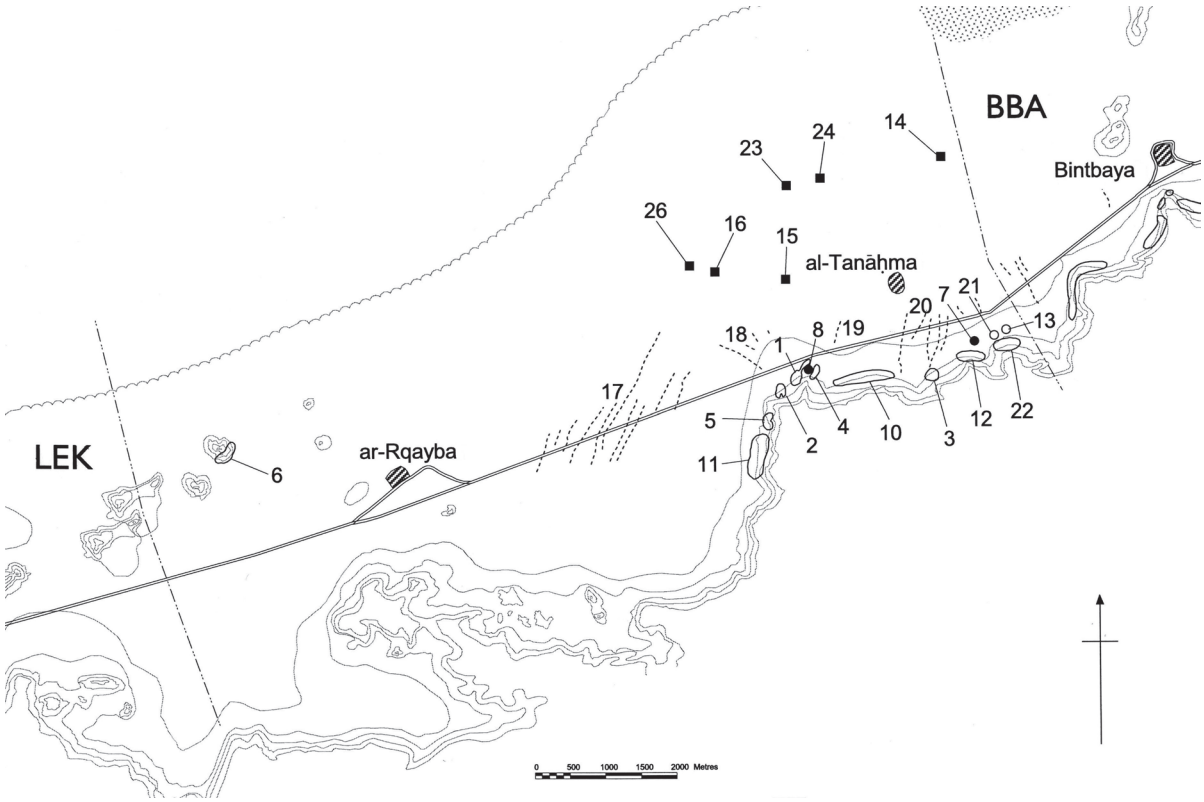


Figure 22.1. Map of sites in ar-Raqayba sector (CMD/FP).

This area covers the Wādī between al-Qṣīr and Bintbaya, with two historic early modern settlements (and possibly earlier occupation also) at ar-Raqayba (Scarin 1937b, 623 – 576 inhabitants, 7,000 date palms) and at-Tanāḥma (Scarin 1937b, 623 – 268 inhabitants, 5,000 date palms). A French team excavated a few burials near at-Tanāḥma (Bellair *et al.* 1953, 85-89), perhaps RUG 005 or RUG 022. A preliminary reconnaissance was made here by CMD during the 1962-63 season, a return visit to RUG 001 in April 1972 (during a non-survey season), and more general survey during April 1973. RUG 001 represents one of the largest cemeteries so far identified in the Wādī. It is also noteworthy that at the W end of this area, there is a substantial gap in the distribution of escarpment-edge cemeteries; these only reappear at al-Qṣīr some 8km to the W (13km if measured along the escarpment). While there is one large group of foggara (RUG 017), which lie beyond the westernmost cemeteries, there is also a similar large gap of *c.*7.5km in the distribution of foggaras in the E part of the al-Qṣīr sector. It seems likely that there was a gap in settlement and oasis farming here in antiquity.
***Ills: AF 1*, 246; *AF 2*, Fig. 22.1.**

RUG 001 Cemetery 26°37.04/13°36.47
Extremely large Type 3 nucleated cemetery on W side of prominent peak, with a mix of type 2b shaft burials and monumental tomb types. Main area on W side of gully, but with outlying groups of tombs around the NW and N side of the promontory. N area very heavily damaged by bulldozers and stone quarrying but appears to have had one or possibly two lines of large tombs, almost entirely robbed out by 1973. In the main S area *c.*500 tombs, the best preserved lying on its S side. Many type 5b rectangular stepped tombs, some still quite well preserved.

Some type 2 stele fragments and small type 4 offering tables noted. This is probably the cemetery site 'near Tanahma' compared by Ayoub to the Royal Cemeteries (Ayoub 1968a, 61). There are many dispersed type 1 mound cairns on the escarpment slopes to the SW of the cemetery. [1962, 1972, 1973, 2000]. **PUGAR, CGAR, LGAR**
***Ills: AF 2*, Figs 22.2-22.4.**

RUG 002 Cemetery 26°37.10/13°36.20
Nucleated Type 3 cemetery to the W of RUG 001, built around a small hillock, just N of a headland. There are a lot of type 2b shaft burials, but also numerous examples of type 5b rectangular stepped tombs in the S area, and possibly others in the more disturbed N part of the site. Some of the tombs are mortared with mud. Surface sherds include ARS. **PUGAR, LGAR**
***Ills: AF 2*, Figs 22.5-7.**

Figure 22.2. RUG 001, general view of main area of dense nucleated cemetery of stepped tombs and shaft burials, looking W (photo: CMD 1973).

Figure 22.5. RUG 002, shaft burials and stepped tombs (photo: CMD 1967).

Figure 22.3. RUG 001, the E end of the cemetery (photo: CMD 1973).

Figure 22.6. RUG 002, stepped tomb on S side of cemetery (photo: CMD 1973).

Figure 22.4. RUG 001, view across cemetery to promontory peak (photo: CMD 1973).

Figure 22.7. RUG 002, type 4b offering table (photo: CMD 1973).

RUG 003 Cemetery 26°37.30/13°37.50
Cairnfield of 35-40 dispersed cairns high on escarpment slopes. Not surveyed on ground. [1973]. **CGAR, ISLAM**

RUG 004 Cemetery 26°37.30/13°36.50
Cemetery area to the E of the spur-neck at ar-Raqayba, consisting of several groups of burials. **Area A** consists of a small nucleated group of *c.*30 type 2b shaft graves. In **Area B** to the E is a straggling line of similar shaft burials. In **Area C** there are a few shaft burials and a cluster of unusual low stony cairns including one composite example with several adjoining mounds, perhaps similar to UAT 004. Further cairns on the N side of the group had been bulldozed by 1973. The big multiple cairn produced a lithic blade from its stonework. To the SE in **Area D**, there is a further small nucleated group of cairns. [1973, 2000]. ***PUGAR? CGAR***
***Ills: AF 2*, Figs 22.8-22.9.**

RUG 005 Cemetery 26°36.90/13°36.20
Cemetery of nucleated shaft graves on lower slopes of spur, in three distinct groups. The N group comprises *c.*30 closely-packed graves. There are also several cairns in black stone dispersed over hill slopes above and to the N. To the S, across a gully was a further tightly clustered group of 30-40 shaft graves, some of which appear to have been excavated. At the S end of the area was a larger group of 50-75 graves. [1973]. ***CGAR***

RUG 006 Cemetery 26°36.60/13°32.00
A scatter of large cairns around the base of an isolated bluff in the Wādī centre. Some type 3a drum cairns have sloping sides and flat tops, covered with small stones. Some handmade pottery in area. Possibly prehistoric pottery. [1973]. **PUGAR**

RUG 007 Lithics scatter 26°37.30/13°37.40
Extensive scatters of Pleistocene lithics to N of RUG 021 on pediment. **PAL**

RUG 008 Rock art, inscriptions 26°37.30/13°36.50
Cluster of rock art and graffiti on the top of the thin ridge at the end of the ar-Raqayba promontory peak. Geometric designs, Libyan inscriptions and 'feet' noted. [1973, 2000]. ***GAR-EMOD***

RUG 010 Cemetery 26°37.30/13°36.90
Dispersed spread of cairns built with very dark local stone to E of RUG 004 along escarpment edge and along slopes. AP coverage indicates a possible nucleated cemetery on lower slopes towards E end of area. Not confirmed and not surveyed on ground. ***LPAST? GAR?***

RUG 011 Cemetery 26°36.70/13°36.20
Dispersed spread of 'black cairns' S of RUG 005 along escarpment edge and along slopes. Estimated 150+ cairns but not surveyed on ground. Many robbed and much damage from vehicle tracks up onto the escarpment. [1973]. ***LPAST? GAR?***

RUG 012 Cemetery 26°37.50/13°37.80
Dispersed cairns on upper slopes of escarpment at small headland. Estimated 50+, not surveyed on ground. ***LPAST? GAR?***

RUG 013 Cemetery 26°37.40/13°38.08
Small Type 4 nucleated cemetery, with tight cluster of type 2b shaft burials. Small fragmentary stele *in situ*. No superstructures surviving and no surface pottery found. [1973, 2000]. ***CGAR,* LGAR**
***Ills: AF 2*, Fig. 22.10.**

Figure 22.8. RUG 004, cluster of shaft graves in Area B (photo: CMD 1973).

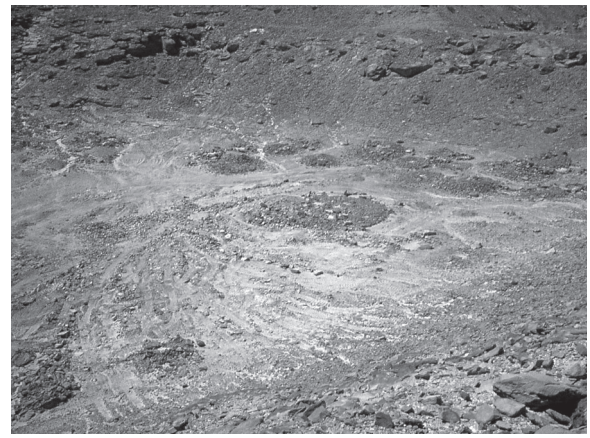


Figure 22.9. RUG 004, cluster of low cairns and shaft burials on E side of promontory, Area C (photo: CMD 1973).

Figure 22.10. RUG 013, cluster of shaft burials (photo: CMD 1973).

Figure 22.11. RUG 016, general view of qasr *looking N (photo: FP 1999).*

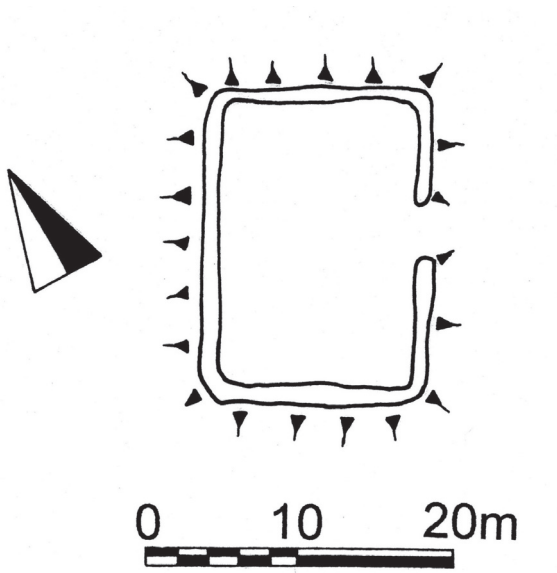


Figure 22.12. RUG 016, sketch plan (FP 1999).

Figure 22.13. RUG 021, stepped drum cairn with mud mortar in core (photo: CMD 1973).

RUG 014 *Qasr* **26°39.00/13°37.60**
Rectangular *qasr* structure. Located on APs only. ***GAR-EMOD?***

Figure 22.14. RUG 022, general view from SE (photo: CMD 1973).

Figure 22.15. RUG 022, broken type 2a stele and displaced offering table with an Arabic graffito on side (photo: CMD 1973).

RUG 015 *Qasr*? **26°38.10/13°36.40**
Possible small rectangular *qasr* structure. Located on APs only.
GAR-EMOD?

RUG 016 *Qasr* **26°37.31/13°35.61**
Mudbrick *qasr* structure *c.*20m x 15m with gap in E wall. Walls *c.*1m thick at base, with slight batter, standing to max. 2m high. Some mud plastering of walls survives. Located on APs, surveyed 1999. [1999]. **CGAR, ISLAM**
***Ills: AF 1*, 148; *AF 2*, Fig. 22.11-22.12.**

RUG 017 Foggara group **26°36.60/13°34.20**
Large group of *c.*10 long channels running into Wādī centre E of ar-Raqayba village towards area of RUG 026. Most visible over *c.*1km with largest examples *c.*2km long. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

RUG 018 Foggara group **26°37.40/13°36.20**
Cluster of 4-5 foggara channels running NW from headland, 100-800m long. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

Figure 22.16. RUG 023, general view of qasr*, looking NW (photo: FP 1999).*

Figure 22.17. RUG 023, general view of interior of qasr*, looking S from entrance (photo: FP 1999).*

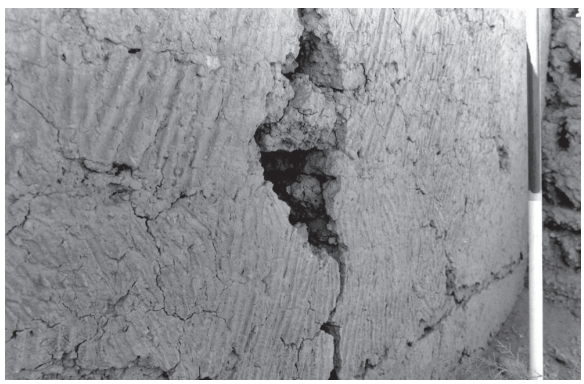


Figure 22.18. RUG 023, detail of mud-plaster on internal walls (photo: FP 1999).

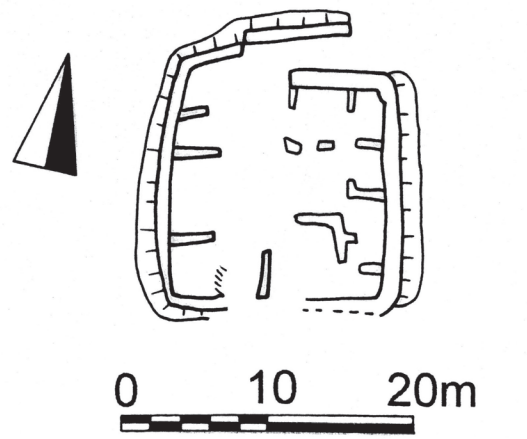


Figure 22.19. RUG 023 sketch plan (FP 1999).

Figure 22.20. RUG 024, standing SW corner of qasr *(photo: FP 1999).*

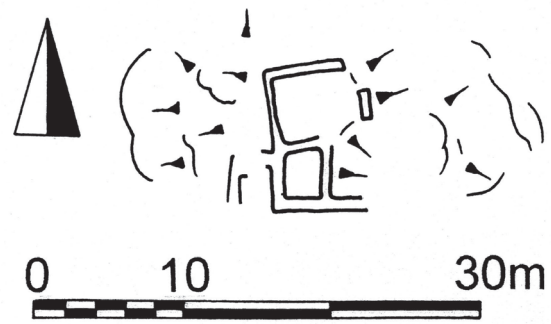


Figure 22.21. RUG 024, sketch plan (FP 1999).

RUG 019 Foggara group 26°37.60/13°36.80
Small group of 2-3 channels running from near headland to NE, *c.*400m long. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

RUG 020 Foggara group 26°37.40/13°37.40
Cluster of 6-8 channels running into area of at-Tanāḥma village, 0.5-1km long. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

RUG 021 Cemetery 26°37.35/13°38.01
Small Type 3 nucleated cemetery of *c.*30-40 tombs to W of RUG 013. The superstructures of some type 5a stepped drum tombs survive, some with a coarse mud plaster. There are also type 2b shaft burials present. Some examples of type 6 'horn' stele (located on the W side of graves) and crude offering tables noted. Little surface pottery, mainly handmade. [1973, 2000]. **CGAR**
***Ills: AF 2*, Fig. 22.13.**

RUG 022 Cemetery 26°37.33/13°37.97
Nucleated Type 3 cemetery of 100-150 graves, many type 2b shaft burials on N side, along with some more monumental types? In 2000, stone from superstructures was being removed, with several piles of robbed stone collected on its N side. Many examples of type 2 stele and type 4 offering tables still *in situ*. Some of higher graves probably previously excavated. On the higher slopes above the cemetery there are many dispersed mound cairns. Parts of three pots beside one grave were possibly part of surface deposits. [1973, 2000]. **CGAR, LGAR**
***Ills: AF 2*, Figs 22.14-22.15.**

RUG 023 *Qasr* 26°37.80/13°36.28
Mudbrick *qasr c.*20m square with some internal walls, in different brick to enclosure wall, still preserved. Some mudplaster, similar to that in RUG 016 survives. Walls max.1.7m thick at base tapering to *c.*1m thick. S side of structure damaged during construction of new road. [1999]. **LGAR, *ISLAM?***
***Ills: AF 1*, 148; *AF 2*, Figs 22.16-22.19.**

RUG 024 *Qasr* 26°37.90/13°36.75
Very poorly preserved *qasr* site with fragmentary walls of structure in mound of decayed mud, *c.*15m square. Fragments of walling survive to *c.*8m tall. [1999]. **CGAR, *LGAR? ISLAM?***
***Ills: AF 1*, 148; *AF 2*, Figs 22.20-22.21.**

RUG 026 *Qasr*? 26°38.10/13°35.60
Possible small rectangular *qasr* structure in sandy area on N side of Wādī. Near square structure, estimated *c.*30m across, with towers at corners and centre of walls. Located on APs only. ***GAR-EMOD?***

SECTION 23. BINTBAYA [BENTBAYA] (BBA)

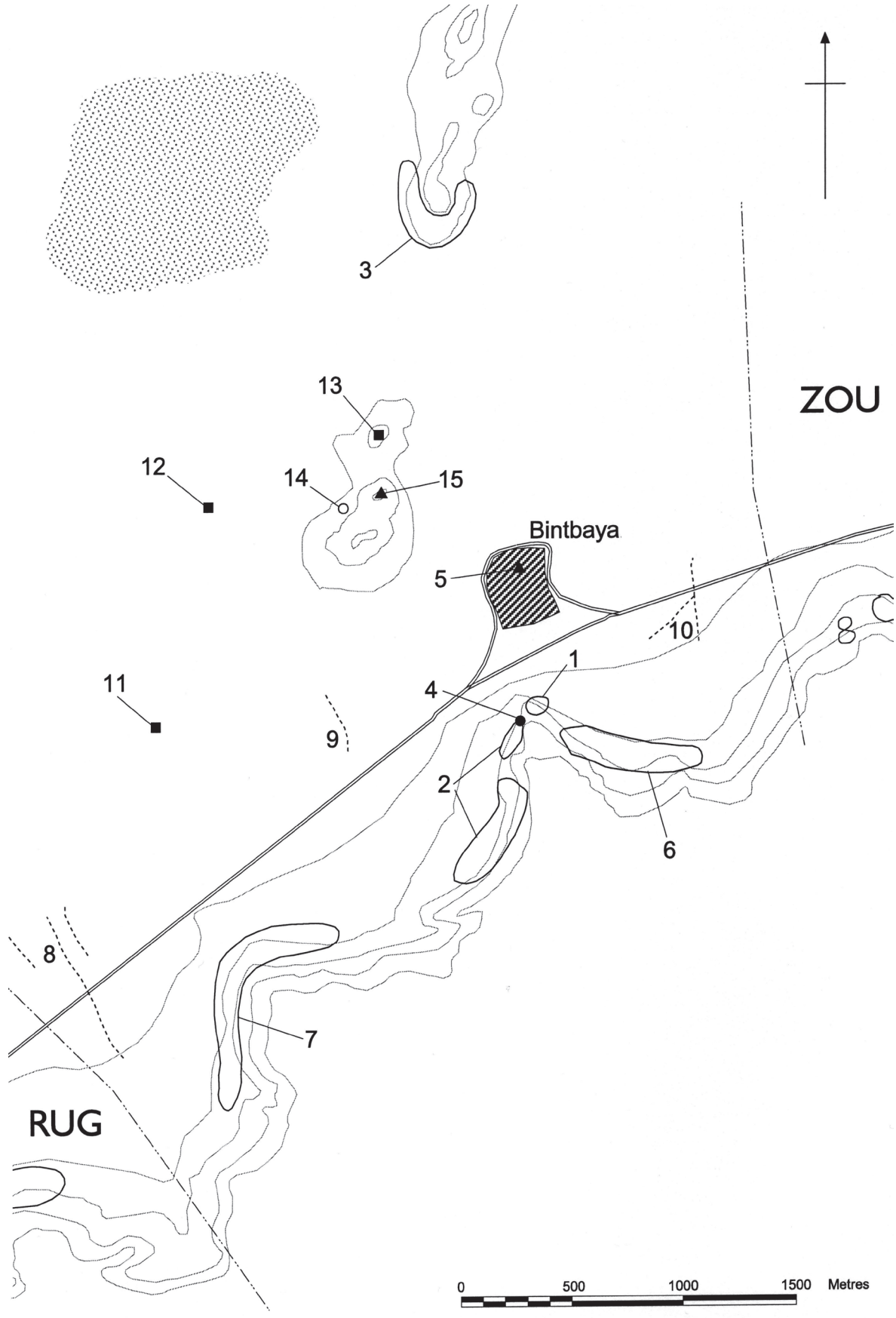


Figure 23.1. Map of sites in Bintbaya sector (CMD/FP).

The Bintbaya area was defined by CMD as the immediate environs of Bintbaya village (Scarin 1937b – 415 inhabitants, 6,200 date palms) and the escarpment close to it. The area was briefly traversed in 1965, but only limited survey was carried out around Bintbaya during April 1973. At that time, major construction works were being carried out at Bintbaya with the building of the 'new town', which resulted in much stone quarrying along the escarpment edge here. No systematic survey was carried out in the Wādī centre. An interesting feature on the N side of the Wādī, is a stony ridge which emerges from beneath the sand sea, which was briefly examined in 1973.
***Ills: AF 1*, 246; *AF 2*, Fig. 23.1.**

BBA 001 Cemetery 26°38.90/13°39.40
Dispersed Type 2 cairn cemetery on escarpment slopes S of village bypass road. Graves on lower slopes badly damaged by graders and bulldozers by 1973. Some big type 1a mound cairns run up the hillside above the damage/robbing, and do not appear to have been opened. Total of *c.*60 survive; one stone bowl noted. Down the spur was a small group of *c.*6 tombs. From one robbed tomb a BR bowl was retrieved. [1973]. ***PUGAR?***
***Ills: AF 2*, Fig. 23.2.**

Figure 23.2. BBA 001, cairns on upper slopes overlooking Bintbaya (photo: CMD 1973).

Figure 23.3. BBA 002, mound cairns on upper slopes of escarpment (photo: CMD 1973).

Figure 23.4. BBA 003, cairns and stone circles on E slopes of ridge, looking E (photo: CMD 1973).

Figure 23.5. BBA 003, cairns on S slopes of ridge, looking SW (photo: CMD 1973).

Figure 23.6. BBA 003, cairns and shaft graves (photo: CMD 1973).

BBA 002 Cemetery 26°38.80/13°39.30
Type 1 dispersed cairn cemetery along escarpment slopes. Mound cairns (type 1a) near bottom of slopes were robbed, but most of the higher tombs appear intact. Very little surface pottery. [1973]. ***LPAST? GAR?***
***Ills: AF 2*, Fig. 23.3.**

BBA 003 Cemetery 26°40.00/13°39.00
Scattered cairns, stone circles (marking type 2b shaft burials?) and possible structures on E and W flanks of black stone ridge running out from sand sea. [1973]. ***LPAST? GAR?***
***Ills: AF 2*, Figs 23.4-23.6.**

Figure 23.7. BBA 004, view of location of lithics scatter along lower escarpment W of Bintbaya (photo: CMD 1973).

Figure 23.8. BBA 005, Old Bintbaya village (photo: CMD 1965).

BBA 004 Lithics scatter 26°38.80/13°39.20
Scatters of lithic material on escarpment pediment below BBA 001, extending along escarpment to SW by BBA 002). [1973]. **PAL?**
***Ills: AF 2*, Fig. 23.7.**

BBA 005 Settlement 26°39.00/13°39.30
It was noted in 1965 that Bintbaya village lay on a pronounced 'tell'-like mound, possibly the site of an ancient settlement. Not further investigated. [1965]. ***GAR-EMOD?***
***Ills: AF 2*, Fig. 23.8.**

BBA 006 Cemetery 26°38.80/13°39.60
Cemetery of dispersed mound cairns along escarpment slopes E of Bintbaya village (E of spur cemetery BBA 001). Not further investigated. ***LPAST? GAR?***

BBA 007 Cemetery 26°38.20/13°38.60
Type 1 cairnfields along escarpment slopes SW of BBA 002. Thought by CMD to probably be 'early' type 1a mound cairns, not further investigated. ***LPAST? GAR?***

BBA 008 Foggara group 26°38.60/13°38.90
Small group of three foggara channels, including one long and prominent channel *c.*800m long, running deep into embayment. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

Figure 23.9. Possible graves (BBA 014) and building BBA 013 beyond, from N end BBA 015 (photo: FP 2000).

Figure 23.10. BBA 013, general view of stone qasr *(photo: FP 2000).*

Figure 23.11. BBA 013, general view of interior of stone qasr *(photo: FP 2000).*

BBA 009 Foggara 26°38.90/13°39.40
Single foggara channel c.300m long. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

BBA 010 Foggara 26°39.00/13°39.70
Single bifurcating channel c.500m long on E side of Bintbaya. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

BBA 011 *Qasr*?
Possible small *qasr* W of Bintbaya village. Located on APs only. ***GAR-EMOD?***

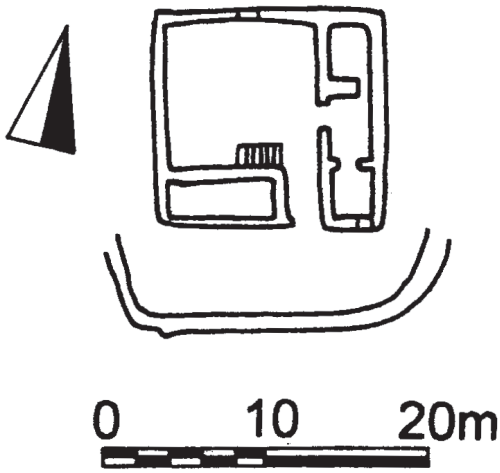


Figure 23.12. BBA 013, sketch plan (FP 2000).

Figure 23.13. BBA 015, SW end of enclosure (photo: FP 2000).

BBA 012 ***Qasr?***
Possible small *qasr* W of Bintbaya village. Located on APs only. ***GAR-EMOD?***

BBA 013 ***Qasr?*, enclosure** **26°39.10/13°38.91**
Rectangular stone and mudbrick building on black stone ridge NW of Bintbaya village. Walls survive 1-2m high with two rooms on E face and stairs in central area. Rough stone enclosure wall on S side with faces of large rubble blocks and core of small stones. Date of standing structure uncertain, possibly post-medieval or more recent, though sherds of Garamantian date collected here. [2000]. **CGAR, LGAR, *ISLAM-EMOD?***
***Ills: AF 1*, 148; *AF 2*, Figs 23.9-23.12.**

BBA 014 Cemetery? 26°38.98/13°38.90
Cluster of stone rubble circles on W slopes of col of blackstone ridge, possibly graves. [2000]. **LPAST? GAR?**
***Ills: AF 2*, Fig. 23.9.**

BBA 015 Escarpment Settlement? 26°39.00/13°38.84
Clusters of stone (hut?) circles and possible small enclosures along W-facing slopes of ridge. Occasional sherds of non-diagnostic handmade and wheelmade wares. Elements of enclosure wall built of pointed orthostats (*cf.* BNH 005), infilled with smaller rubble. [2000]. **CGAR, LGAR**
***Ills: AF 2*, Fig. 23.13.**

SECTION 24. AL-ZŪWĪYA [ZOUAYYA] (ZOU)

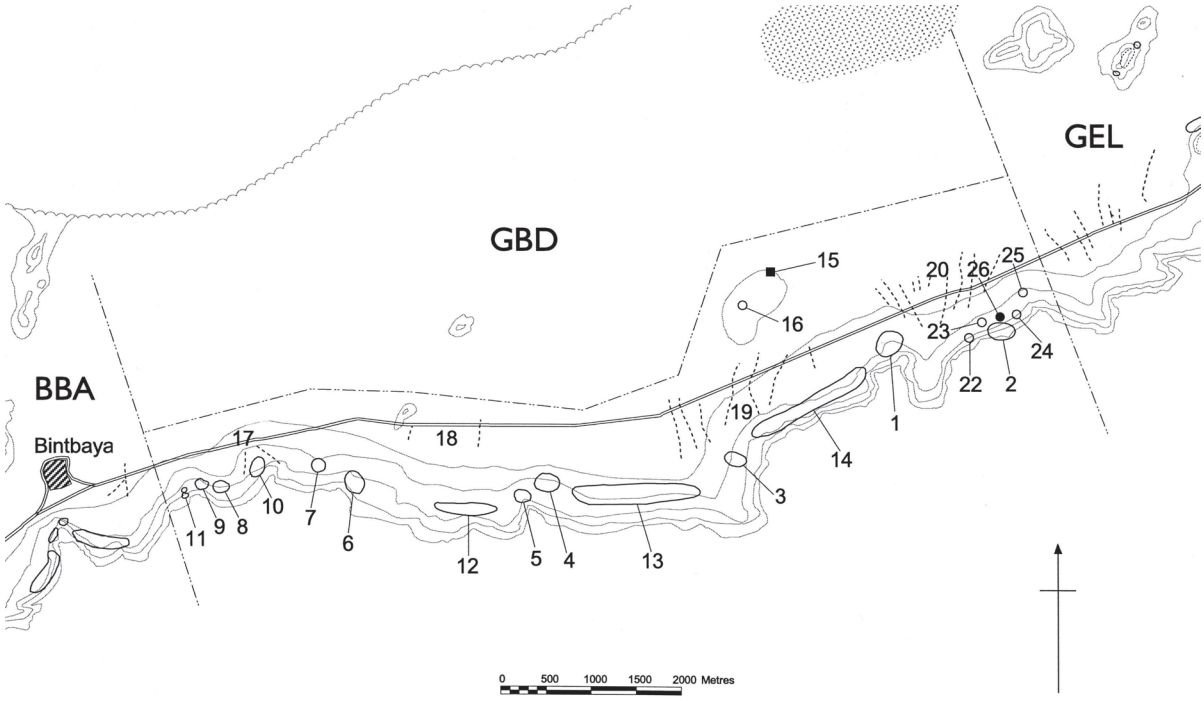


Figure 24.1. Map of sites in al-Zūwīya sector (CMD/FP).

This area covered the escarpment between Bintbaya and al-Qal'at, the wadi-centre sites being separately listed by CMD as Qasr Bin Dughba (GBD). AP coverage indicates that in the late 1950s, the area was thinly populated with a few farms close to Bintbaya, some around Būdrinna and near al-Zūwīya itself. Most of the area N of the old roadline had a quite dense cover of trees and scrub.

Initial survey in this area was carried out in 1962 when some of the major cemeteries on the escarpment were located, including ZOU 001, one of the largest and most impressive cemeteries in the Wādī. More systematic coverage of the escarpment edge was carried out in 1973, although this work concentrated on identifying the major nucleated cemeteries without recording the more general distribution of cairns dispersed along the escarpment. A notable feature of the escarpment edge in this area is the abundance of large nucleated cemeteries of 'classic Garamantian' type. Several of these had clearly been part-excavated prior to 1973, probably by H. Ziegert who worked in this area, and some were protected by the Department of Antiquities. Ziegert had also examined some Palaeolithic sites on the hamada plateau in this area (Ziegert 1978)

***Ills: AF 1*, 246; *AF 2*, Fig. 24.1.**

Figure 24.2. ZOU 001, large group of well-preserved type 5e drum tombs with raised centres (photo: CMD 1963).

Figure 24.3. ZOU 001, collapsed/robbed drum tombs, with type 2c stele in foreground (photo: CMD 1967).

Figure 24.4. ZOU 001, tightly packed shaft graves without superstructures (photo: CMD 1963).

Figure 24.5. ZOU 001, type 4 stele (photo: CMD 1973).

Figure 24.6. ZOU 001, displaced type 4 offering tables (photo: CMD 1973).

Figure 24.7. ZOU 002, general view over cemetery, looking N (photo: CMD 1973).

Figure 24.8. ZOU 002, flat-topped drum tomb with stele and offering table on W side (photo: FP 2000).

Figure 24.9. ZOU 002, detail of in situ type 2a stele and type 4a offering table (photo: FP 2000).

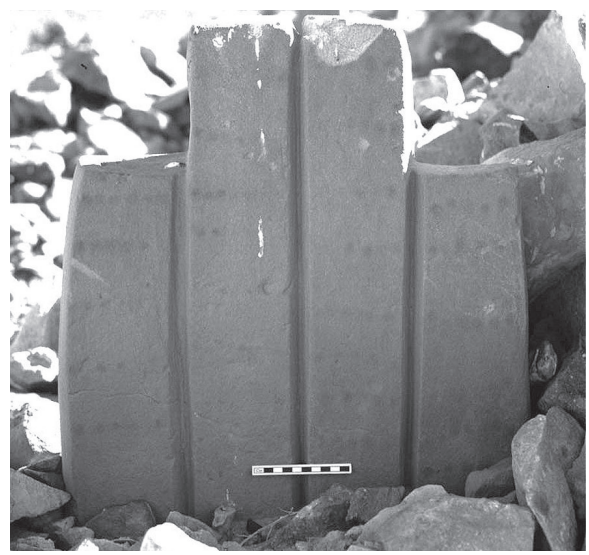


Figure 24.10. ZOU 002, type 2b stele with painted rows of dots (photo: FP 2000).

ZOU 001 Cemetery 26°39.84/13°44.17
A very large Type 3 cemetery with type 3b drum tombs and type 5b stepped tombs, commonly clustered in small groups. Many of the drum tombs have small stepped central areas (type 5a). Numerous examples of stele of several types and offering tables, some still *in situ*, on both E and W sides of tombs. Tombs fall into four main groups, all with drum tombs interspersed with areas with more amorphous type 1a mound cairns and type 2b shaft graves. Abundant surface pottery. Not surveyed in detail but an estimated 750-1000 tombs in total, with some further dispersed cairns along escarpment to SW. In 2000, cemetery still quite well preserved. [1962-63, 1967, 2000]. **CGAR, LGAR**
***Ills: AF 2*, Figs 24.2-24.6.**

ZOU 002 Cemetery, inscriptions 26°39.98/13°44.80
Another large Type 3 nucleated cemetery, partly robbed but undisturbed by stone quarrying or other recent disturbance. The site was first recorded by CMD in 1973 (in some of CMD's notes the site is referred to as 'cemetery 147'), with further work by FP. Most burials appear to have been in type 2 subterranean shafts, some stone-lined and covered with large slabs (type 2c). There are also built circular (type 3b) or square/rectangular drystone tombs (type 4b), some of which have been robbed from the top, obscuring their original forms. At least one example was of a bowed rectangular form (4 x 2m x 75cm to top of flat first stage – with a probable second storey above = type 5d). Some of the other tombs were certainly of type 5 stepped construction (one example had the start of a second stage inset 55cm, *c.*70cm above ground level).

A notable feature of this cemetery is the very large number of stele and offering tables still intact and *in situ*. Surface pottery was also abundant. Most stele and offering tables were placed against the E side of the tombs, but a few are also found on the W side (in the W part of the cemetery and where tombs were butted against each other in the densest area). The normal pattern was to have both a stele and an offering table together, the 'hand' stele behind the offering table and set against the wall of the tomb. The offering tables (variants of type 4) were invariably placed with the longer slot to the front and the smaller compartments nearer to the tomb and hand. Most tables had 4-5 small compartments behind the long slot, a few examples had additional compartments on either side of the rear edge of the long slot. Some examples had a zig-zag incised decoration along the front edge. Most of the offering tables were fairly small 35-40 x 30cm, though some are 50cm or more wide. At least one example was inscribed with a Libyan text.

There was also considerable variety in the form of the stele. The majority was of stele type 2a cut as a single block, with the fingers demarcated by incised grooves, with the two outer digits being shorter than the middle two (the tops were mostly flat but some examples had a marked dished appearance, type 2d). In some instances the space between the fingers was cut clean through (type 4) and in yet others a four-digit hand was fashioned from four pieces (a central two digit pincer-like piece, flanked by two small pointed stele (type 5a). [1973, 2000]. **CGAR, LGAR**
***Ills: AF 1*, 199, 205-08; *AF 2*, Figs 24.7-24.13.**

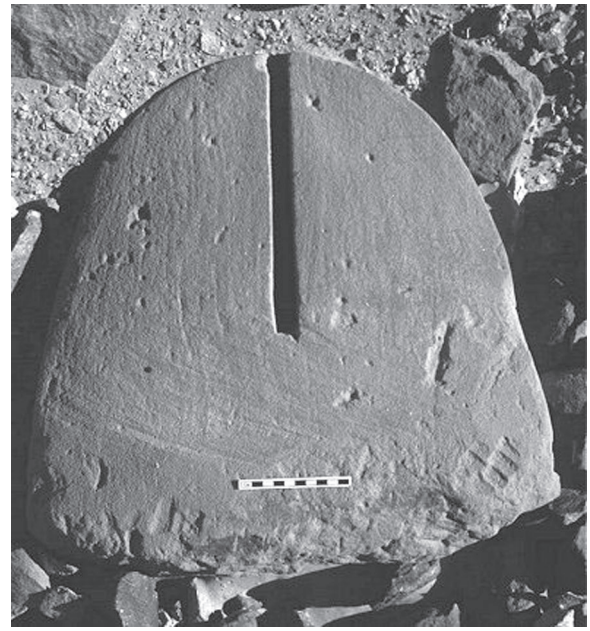


Figure 24.11. ZOU 002, central element of a probably type 5a stele (photo: FP 2000).

Figure 24.12. ZOU 002, stele with inscribed type 4a offering table (photo: FP 2000).

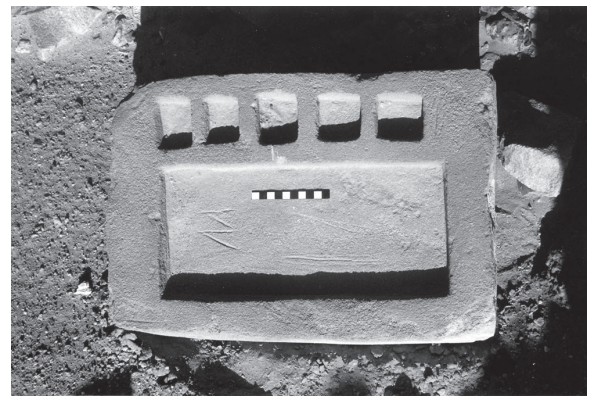


Figure 24.13. ZOU 002, inscribed type 4a offering table (photo: FP 2000).

Figure 24.14. ZOU 003, general view over cemetery (photo: CMD 1973).

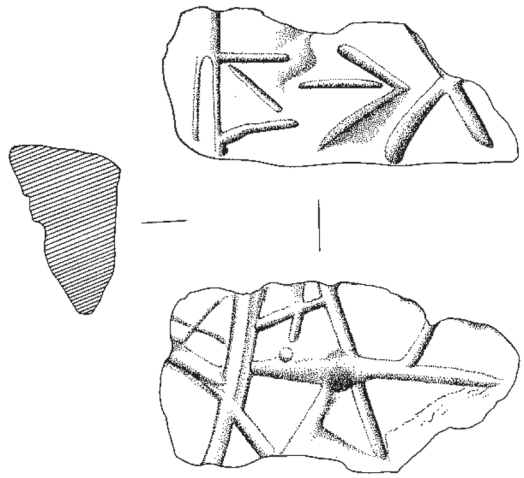


Figure 24.15. ZOU 003, incised stone <3516>, possibly a bead grinder. Scale: 1:4 (CMD 1973).

ZOU 003 Cemetery 26°39.30/13°43.30
Large Type 3 nucleated cemetery including large type 3b drum tombs, some stepped (type 5a), and many type 2b shaft graves. Several type 2 'hand' stele and type 4 offering tables were found, generally not *in situ*. The N group of shaft graves were not associated with offering tables or stele. Stone with incised grooves <3516> also found in area. (this was originally known as 'cemetery 156') [1973]. **CGAR**
***Ills: AF 2*, Figs 24.14-24.15.**

ZOU 004 Cemetery 26°38.90/13°42.50
Large Type 3 nucleated cemetery on W side of prominent gully, consisting of type 2 shaft burials and tombs of uncertain type. Considerable spread of rubble from superstructures but these were all destroyed by stone robbing. Estimated 150+ graves. Evidence for type 2 'hands' and type 4 offering tables. In 1973, site was partially fenced and had a guard. (previously 'cemetery 158') [1973]. **CGAR, LGAR**
***Ills: AF 2*, Fig. 24.16.**

Figure 24.16. ZOU 004, general view of cemetery looking NW (photo: CMD 1973).

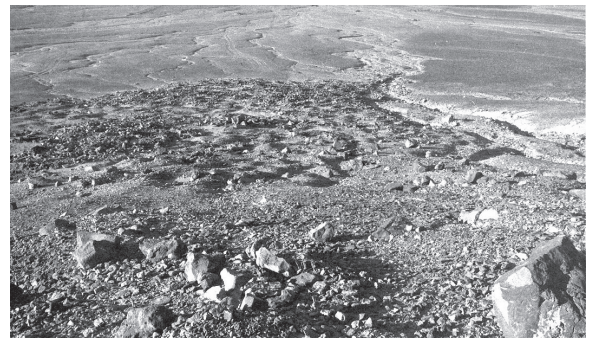


Figure 24.17. ZOU 005, general view over E side of cemetery (photo: CMD 1973).

Figure 24.18. ZOU 006, W end of cemetery (photo: CMD 1973).

Figure 24.19. ZOU 006, E end of cemetery (photo: CMD 1973).

ZOU 005 Cemetery 26°38.80/13°41.90
Large Type 4 cemetery to W of ZOU 004. Little surface pottery and only one stele fragment noted. Most burials are type 2b shaft graves and no upstanding superstructures survive. Graves on western side have less rubble around them. Evidence for limited excavation. [1973]. **CGAR**
***Ills: AF 2*, Fig. 24.17.**

ZOU 006 Cemetery 26°38.94/13°41.06
Large Type 4 cemetery of nucleated shaft graves spread in honeycomb fashion along lower escarpment slopes, divided into several smaller sections. Recorded as heavily disturbed by robbing and stone quarrying, and no superstructures survive. Evidence for previous excavations. [1973, 2000]. **PUGAR, CGAR, LGAR**
***Ills: AF 2*, Figs 24.18-24.19.**

ZOU 007 Cemetery 26°38.97/13°40.86
Large nucleated Type 3 cemetery in two groups to E and W of a central Wādī. By 1973, both had suffered from recent stone robbing by vehicles and bulldozers and no superstructures survived alongside the expected shaft burials. However, CMD suggested that the cemetery had been deliberately targeted as a source of stone, so there may have been more monumental types originally. In the E group, a few superstructures partially survive, including small type 3b drum tombs and at least one stepped sub-rectangular example (type 5d). Graves in the western section include drum tombs and a few possible fragments of type 2 'hand' stele. Evidence for previous excavations in this area. [1973, 2000]. **CGAR, LGAR**

ZOU 008 Cemetery 26°38.80/13°40.30
Large Type 3 nucleated cemetery of 100+ graves, on pediment between two prominent gullies. A few examples of type 3b drum tombs survive, some with stepped tops (type 5a). Evidence for some excavation and substantial stone robbing in places, as well as some shaft burials. Fragments of 'hands' and offering tables on surface. [1973]. **CGAR**

ZOU 009 Cemetery 26°38.80/13°40.20
Small Type 4 (?) nucleated cemetery to W of ZOU 008. Estimated 75-100 mainly shaft graves. Evidence of previous excavations. Little surface pottery but fragments of offering tables and stele noted. [1973]. **CGAR**

ZOU 010 Cemetery 26°38.90/13°40.50
Small Type 1 cemetery of dispersed cairn graves alongside a gully. Some stone robbing in this area. Very little surface pottery. [1973]. ***LPAST? GAR?***

ZOU 011 Cemetery 26°38.80/13°40.00
Small cemetery in two sections with 20+ graves in each. Robbed cairn superstructures of uncertain form with a few fragments of 'hands' on surface. No offering tables. Some possibly excavated graves in S part of site. [1973]. **CGAR**

Figure 24.20. ZOU 015, fortified village from NE (photo: CMD 1973).

Figure 24.21. ZOU 015, fortified settlement, internal stone structures (photo: FP 2000).

ZOU 012 Cemetery 26°38.80/13°41.60
Cairns dispersed along escarpment between ZOU 005 and 006. Not surveyed or recorded, but indicated that simple 'early' cairns (type 1a?). ***LPAST? GAR?***

ZOU 013 Cemetery 26°38.90/13°42.50
Cairns dispersed along escarpment between ZOU 003 and 004. Not surveyed on ground, but indicated that simple 'early' cairns (type 1a?). ***LPAST? GAR?***

ZOU 014 Cemetery 26°39.50/13°43.80
Cairns dispersed along escarpment between ZOU 001 and 004. Not surveyed on ground, but indicated that simple 'early' cairns (type 1a?). ***LPAST? GAR?***

ZOU 015 *Qasr*, enclosed settlement 26°40.19/13°43.42
Qaṣr al-Zūwīya. Fortified village site on bluff in Wādī centre. Core of 20-30 rooms, with lower level of structures on inside face of circuit wall. Probable entrance at W end of site. Regular construction of mud-mortared stone, combining local black stone and lighter sandstone, with some quite fine herringbone work. An AMS date from the site (OxA-9822: 279±32BP) suggests that the site could date back to the 16th-18th century AD. [1973, 2000]. **ISLAM, EMOD**
***Ills: AF 1*, 175; *AF 2*, Figs 24.20-24.22.**

Figure 24.22. ZOU 015, internal stone structures (photo: FP 2000).

Figure 24.23. ZOU 025, view N over cemetery (photo: FP 2000).

ZOU 016 Cemetery? 26°40.10/13°43.30
Scattered cairns on blackstone ridge to W of ZOU 015. ***LPAST? GAR?***

ZOU 017 Foggara group 26°39.10/13°40.30
Two foggara channels *c.*500m long, running in to cultivated area E of Bintbaya. Plotted from APs only. ***GAR***
***Ills: AF 1*, 246.**

ZOU 018 Foggara group 26°39.20/13°41.50
Cluster of three foggara channels *c.*500m long. Plotted from APs only. ***GAR***
Ills: AF 1, 246.

ZOU 019 Foggara group 26°39.10/13°43.10
Cluster of 7-8 foggara channels running W and E of blackstone ridge, 500-800m long. Plotted from APs only. ***GAR***
***Ills: AF 1*, 246.**

ZOU 020 Foggara group 26°40.00/13°44.50
Cluster of 10-12 foggara channels, quite regularly spread, 500-600m long. Plotted from AP coverage only. ***GAR***
***Ills: AF 1*, 246.**

ZOU 022 Cemetery 26°39.88/13°44.65
Small linear cemetery of tightly packed shaft graves running down a small ridge between two gullies. Small quantities of handmade pottery only. [2000]. ***LPAST? GAR?***

ZOU 023 Cemetery 26°39.98/13°44.73
Small Type 3 nucleated cemetery of *c.*30-40 graves, including cairns, shaft burials and tombs (?). Some quite well preserved type 3b drum tombs 2.5-3m in diameter. Several examples of *in situ* 'hands', located on both W and E sides of graves. Some examples of double 'hands' placed side by side, and *in situ* offering tables. [2000]. **CGAR**

ZOU 024 Cemetery 26°40.04/13°44.95
Dispersed Type 1 cemetery of *c.*100 cairns along higher escarpment slopes to E of ZOU 002. Subcircular and conical type 1 mound cairns mainly. Cairns heavily robbed with occasional bone fragments on surface but no sherds. [2000]. ***LPAST? GAR?***

ZOU 025 Cemetery 26°40.17/13°44.98
Nucleated Type 4 cemetery of *c.*150 graves below promontory, evidently only type 2 shaft burials. Several 'hands' and small rounded offering tables on the surface. Surface sherds mainly handmade wares. [2000]. **CGAR**
***Ills: AF 2*, Fig. 24.23.**

ZOU 026 Lithics scatter 26°40.02/13°44.84
Extensive scatters of lithics along pediment suggesting discrete processing areas of cores and flakes. Scatter includes an Acheulean biface. [1973, 2000]. **PAL**

SECTION 25. QAṢR BIN DUGHBA [GASR BEN DOUGBA] (GBD)

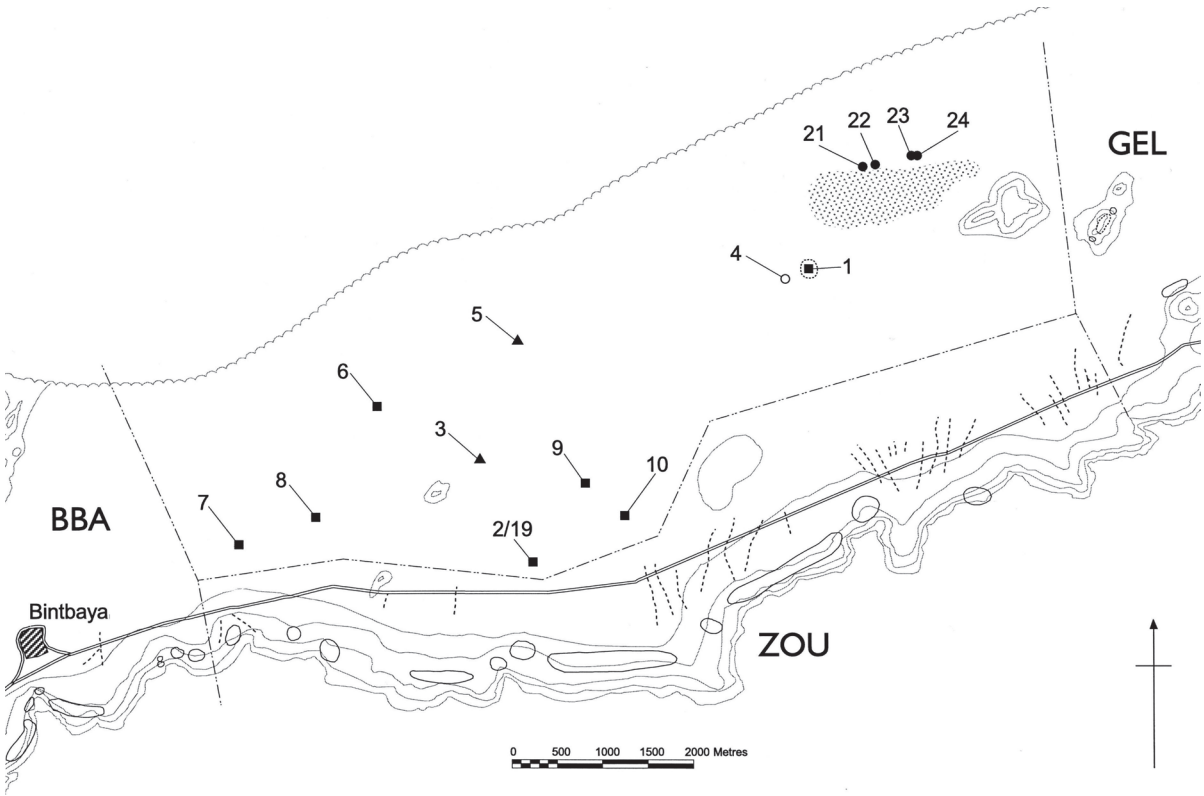


Figure 25.1. Map of sites in Qaṣr bin Dughba sector (CMD/FP).

Some preliminary reconnaissance was carried out here in 1962, and again in 1973, but this was limited in scope and even some major sites (e.g. GBD 001) were not systematically surveyed. In this area CMD distinguished the wadi-centre sites, listed as GBD, from those close to the escarpment, which are listed under al-Zūwīya (ZOU). AP coverage shows that in the 1950s there was no significant settlement or cultivation in the Wādī in this area, which was then covered with low scrub and numerous spring mounds. CMD identified several *qsur* in this area on AP coverage, but most were only located on the ground and recorded in 1999 and 2000. There were no major villages in this sector when the Italian censuses were carried out in the 1930s (Scarin 1937b, 622)

Two locations near Qaṣr Bin Dughba (at GPS: 26°42.05/13°44.66 and between 26°42.83/ 13°48.68 and 26°42.56/13°47.49) were chosen by the geomorphologists to 'ground check' the identification of palaeolake shorelines on satellite imagery. The presence of these shorelines was confirmed on the ground. These surfaces are frequently overlaid with prehistoric cultural material (lithics, potsherds, ostrich eggshell fragments etc.) and artefacts were identified in areas of sand deflation, for example, close to sand dunes and spring mounds where aeolian processes were active (e.g. GBD 021-024).

***Ills: AF 2*, Fig. 25.1.**

GBD 001 Urban settlement, *qasr*, enclosed settlement **26°41.30/13°43.81**

This major site (identified by CMD as 'Old Zouya' and latterly Qaṣr Bin Dughba), was located in 1962, though we can find no reference to it in CMD's published work on the Garamantes. A large enclosed settlement standing 3m+ above the surrounding plain, the site encompasses an area of *c.*2.5 ha (not 4 ha as stated in *AF 1*, 143). The mudbrick enclosing wall is eroded close to the level of the settlement mound within, although the locations of several interval towers can be identified. A partially upstanding *qasr* is situated in the SE quarter. Elements of the settlement's internal plan with tight-packed rectilinear houses and narrow streets are apparent on the surface. Although equalled in size by many other Garamantian village settlements, the scale and complexity of both the defences and the internal buildings suggests that we are dealing with something at a different socio-political level to the average Garamantian site and the 'urban settlement' interpretation is tentatively advanced.

As elsewhere in this area, the ground is very salted and crusted. Surface sherding identified some possible Roman-period imports including amphorae, jugs and flagons but no 'ARS'. By 1973, some disturbance to the site was noted and a modern track now runs across the site, causing some damage. Further sherding and a full survey was carried out after the rediscovery of the site

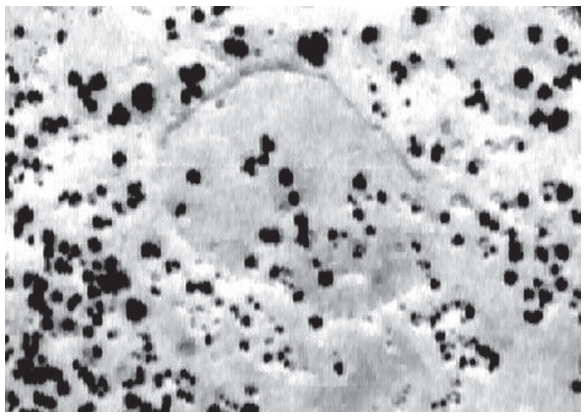


Figure 25.2. GBD 001, aerial photograph of walled settlement.

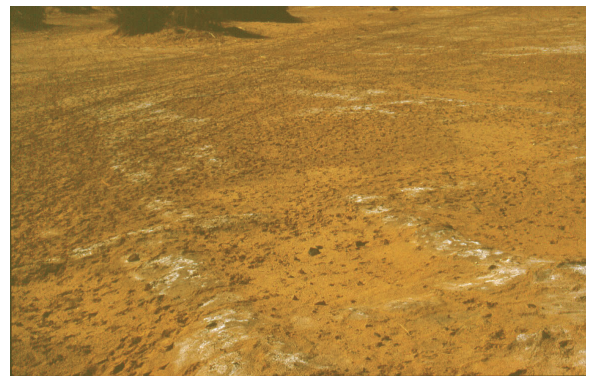


Figure 25.5. GBD 001, detail of internal mudbrick buildings showing at surface (photo: FP 2000).

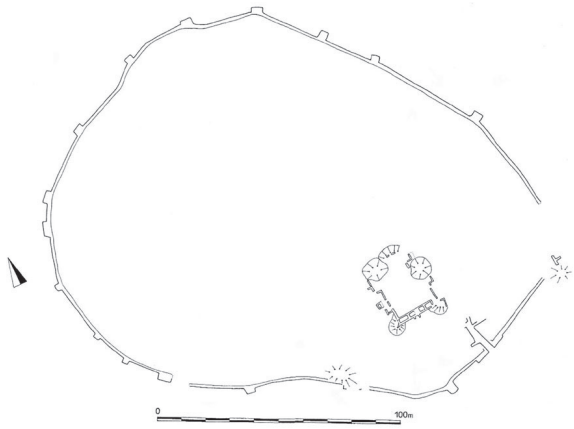


Figure 25.3. GBD001, plan of walled settlement (FP 2000).

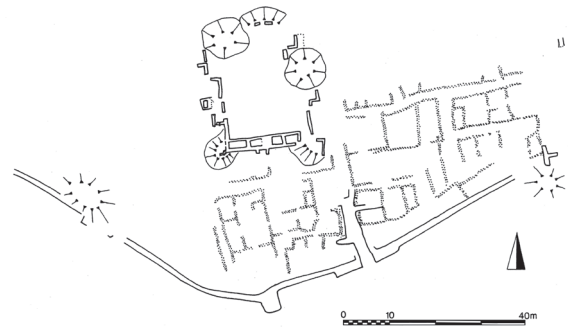


Figure 25.6. GBD 001, sketch plan of mudbrick wall lines in SE part of site around qasr *(FP 2000).*

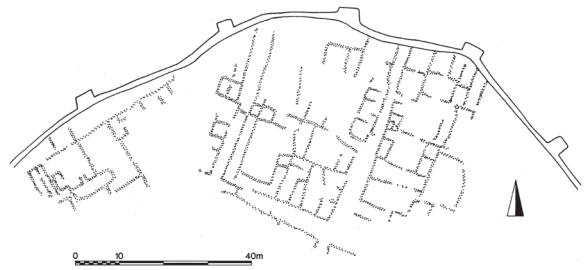


Figure 25.7. GBD 001, sketch plan of mudbrick wall lines in N part of site (FP 2000).

Figure 25.4. GBD 001, wall-lines of internal structures and streets (photo: CMD 1963).

Figure 25.8. GBD 001, view along N defences, looking SW (photo: FP 2000).

Figure 25.9. GBD 001, view of W defences, looking NE (photo: FP 2000).

Figure 25.10. GBD 002, Qaṣr Būdrinna from E (photo: CMD 1973).

Figure 25.11. GBD 002, interior, looking SW (photo: FP 1999).

Figure 25.12. GBD 003, site of excavations (photo: CMD 1973).

in 2000. Two AMS samples from the site (OxA-9580: 1614±35BP and OxA-9853: 1560±45BP) suggest a date in the range late 4th to early 6th century AD. There are also a few residual (or curated) Pleistocene and Holocene lithics [1962, 1973, 2000]. **PUGAR, CGAR, LGAR, ISLAM [PAL, PAST, LPAST]**
***Ills: AF 1*, 144, 157, 169, 349; *AF 2*, Figs 25.2-25.9.**

GBD 002 *Qasr* 26°39.46/13°42.13
Qaṣr Būdrinna. Mudbrick *qasr* site, previously excavated by Ziegert, in the 1970s. In area of *qasr*, imported sherds noted from S of *qasr* to N of well. An AMS sample from the site (OxA-9941: 1654±35BP) suggest the site could date back to 3rd-6th century AD. [1973, 2000]. **CGAR, LGAR, EMOD**
***Ills: AF 2*, Figs 25.10-11.**

GBD 003 Settlement 26°40.30/13°41.80
A wadi-centre site, previously investigated by Ziegert Narrow patterns of trenches dug into a mudbrick mound. Exact location uncertain, and not revisited by FP. [1973].
GAR-EMOD?
***Ills: AF 2*, Fig. 25.3.**

GBD 004 Cemetery 26°41.30/13°43.80
Oasis centre Type 7 or 8 cemetery near GBD 001; the outline of graves, showing as rectangular patches (perhaps type 4b tombs rather than pyramids, which are unknown in the E sectors of the Wādī al-Ajāl?), were visible on the surface. May have similarities with GER 011. Sherds of amphorae and local handmade wares noted on surface. Located 1962, not further investigated. [1962]. **CGAR**

GBD 005 *Qasr* 26°40.70/13°42.00
Probable *qasr* structure, identified as almost square upstanding enclosure on APS. Not identified on ground.
GAR-EMOD?

GBD 006 *Qasr* 26°40.50/13°41.20
Probable *qasr* structure, identified as well-defined almost square upstanding enclosure on APS. Not identified on ground. ***GAR-EMOD?***

GBD 007 *Qasr* 26°39.57/13°40.30
Small *qasr* structure in yellow mudbrick, *c.*20m square, max. H: *c.*3m. Heavily decayed and quarrying of material from W wall where entrance may have been located. One tower was relatively well preserved in NE corner, others heavily eroded. Now located on N side of wadi-centre road. An AMS sample from the site (OxA-9825: 1684±35BP) suggests the site could date back to 3rd-5th century AD. [1999]. **CGAR, LGAR, *ISLAM***
***Ills: AF 1*, 148; *AF 2*, Figs 25.13-25.14.**

Figure 25.13. GBD 007, general view looking S (photo: FP 1999).

Figure 25.15. GBD 008, general view looking SW (photo: FP 1999).

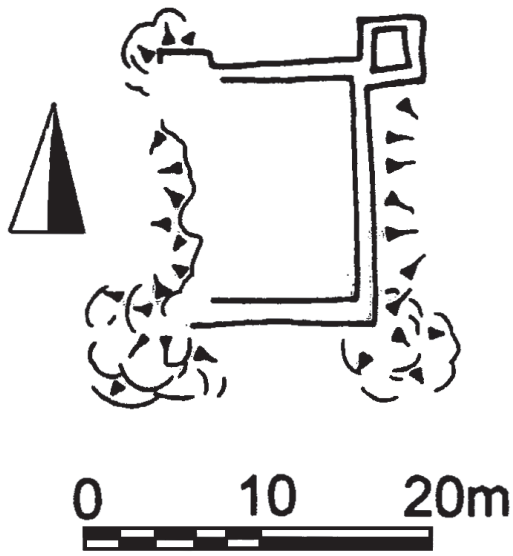


Figure 25.14. GBD 007, sketch plan (FP 1999).

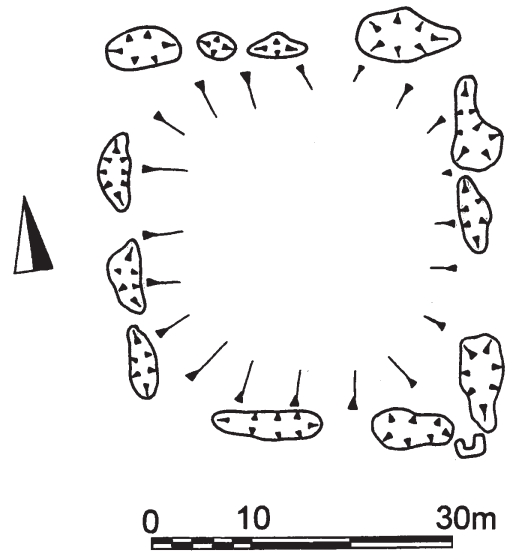


Figure 25.16. GBD 008, sketch plan (FP 1999).

GBD 008 ***Qasr*** **26°39.74/13°40.78**
Very poorly preserved *qasr* site preserved only in outline of decayed yellow mudbrick walls *c.*30m square, with indications of a corner tower in the SE corner. Now located on S side of wadi-centre road. [1999]. ***GAR-EMOD?***
***Ills: AF 1*, 148; *AF 2*, Figs 25.15-25.16.**

GBD 009 ***Qasr*** **26°39.96/13°42.42**
Small mudbrick *qasr*. Subrectangular, *c.*20m square. Most of W and S walls reduced to mud mounds but the structure originally had corner towers, a central tower in the N wall and perhaps a gate in the S wall. Walls 0.6-0.8m thick, widening towards base, surviving to max. H: *c.*2.5m. [1999]. ***GAR-EMOD?***
***Ills: AF 1*, 148; *AF 2*, Fig. 25.17.**

GBD 010 ***Qasr*** **26°39.75/13°42.66**
Mudbrick *qasr*, *c.*30m square with tower in S wall., and possible gate in N wall. Thick walls tapering from *c.*2m wide near base to *c.*1m at height of 4m. [1999]. **CGAR**
***Ills: AF 1*, 148; *AF 2*, Figs 25.18-25.20.**

GBD 019 ***Qasr*** **26°39.47/13°42.11**
Mudbrick *qasr c.*30m square with tower in S wall and gate in N wall. Walls constructed with twin faces of yellow mudbrick surviving up to 2.6m; tower stands *c.*5m high. [1999]. ***GAR-EMOD?***
***Ills: AF 1*, 148; *AF 2*, Fig. 25.21.**

GBD 021 Lithics scatter **26°41.90/13°44.13**
One small white-banded quartzite core flake and grinding stone, possibly middle Holocene, on deflated sand surrounded by sand and relic spring mounds as well as vegetation, along extant N margin of palaeolake sediments. **CGAR, PAST**

GBD 022 Lithics scatter **26°41.91/13°44.20**
One flake of quartz pebble and fragments of grindstone, on dark/black sandstone on sand with similar context to GBD 021. **PAST**

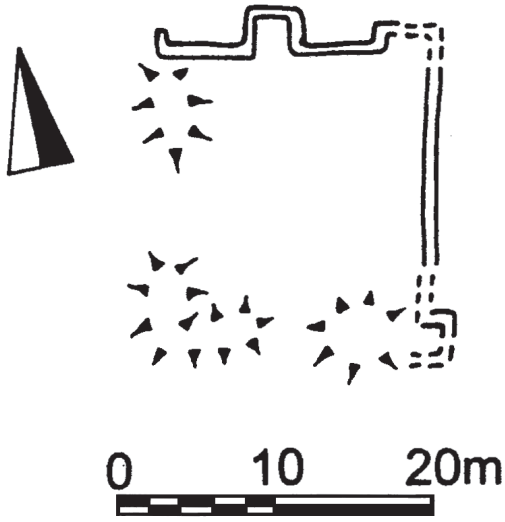


Figure 25.17. GBD 009, sketch plan (FP 1999).

Figure 25.18. GBD 010, general view looking N (photo: FP 1999).

Figure 25.19. GBD 010, general view looking S (photo: FP 1999).

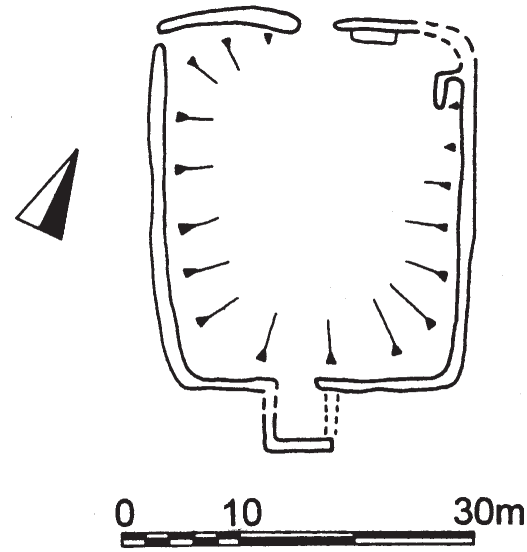


Figure 25.20. GBD 010, sketch plan (FP 1999).

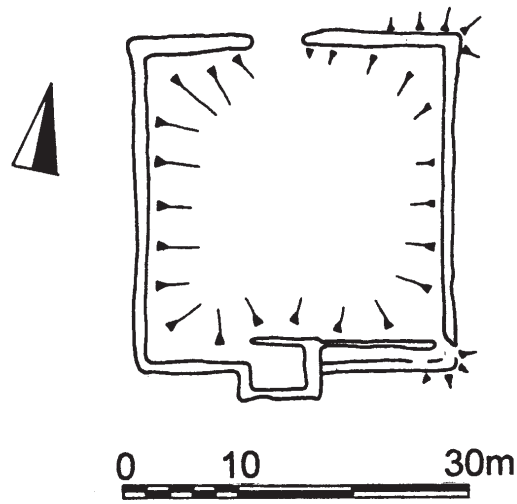


Figure 25.21. GBD 019, sketch plan (FP 1999).

GBD 023 Lithics scatter 26°41.96/13°44.42
Sparse scatters of flake fragments on fine quartzite (better-quality stone than at GBD 021-22) and flint flakes on deflated sand at the base of the spring mound. **PAST**

GBD 024 Pottery scatter, occupation? 26°41.96/13°44.46
Shattered grinding stone and two fragments of extremely coarse pottery (one rim) on deflated sand and associated with a spring mound. **PAST?**

SECTION 26. QAL'AT [GELAH] (GEL)

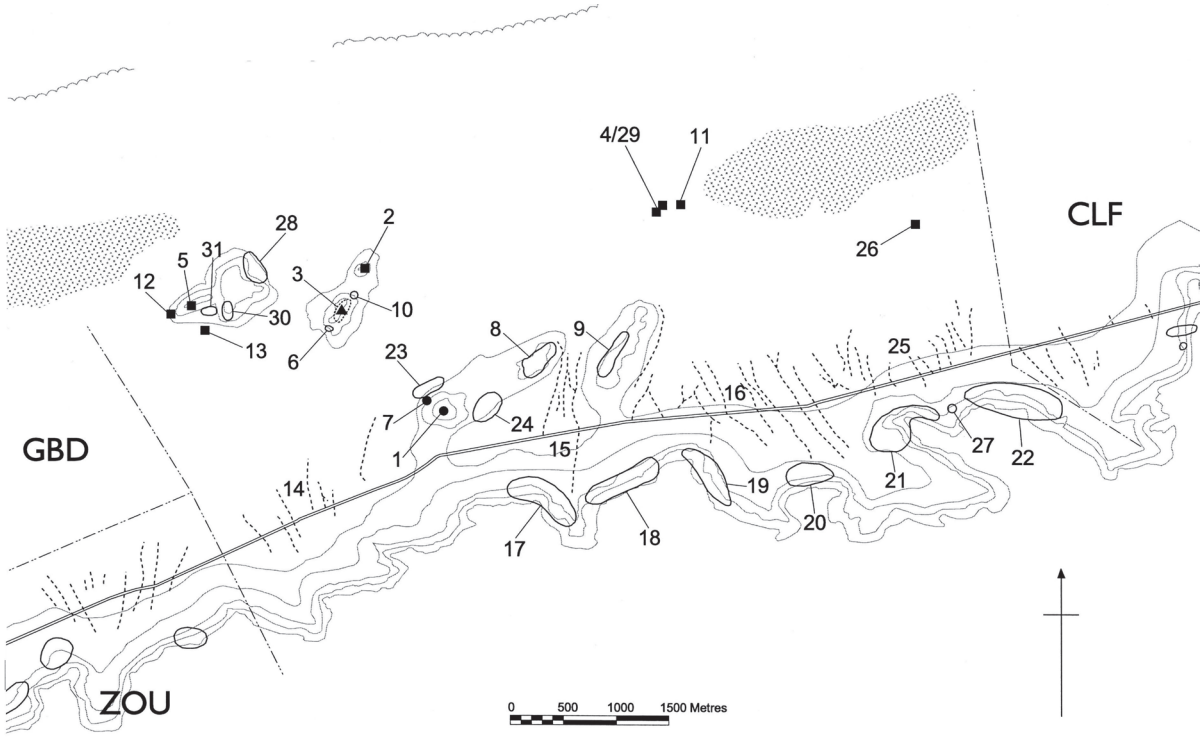


Figure 26.1. Map of sites in Qal'at sector (CMD/FP).

Figure 26.2. The Qal'at natural 'Pyramid' looking NE (photo: CMD 1965).

Figure 26.4. View W along Wādī from GEL 005 (photo: CMD 1973).

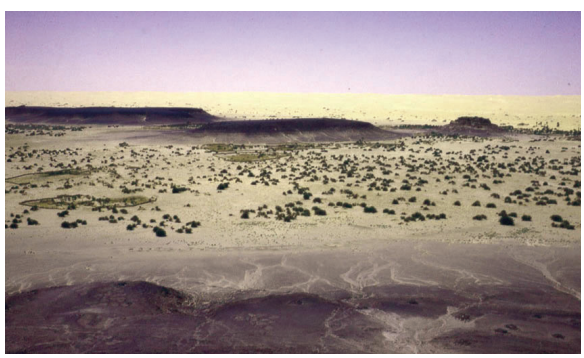


Figure 26.3. The blackstone ridges in the valley centre, view NW from 'Pyramid' hill. GEL 002 is on the small hill to right and GEL 005 to left (photo: CMD 1965).

Figure 26.5. View E from area of GEL 005 across hills in centre of Wādī; GEL 002 on left in middle distance (photo: CMD 1973).

This area now has one substantial modern village site at al-Qal'at (Gelah), which is a recent foundation. There were no major inhabited villages in the area in the 1930s (Scarin 1937b, 622). The most prominent feature of this area is the 'Pyramid' hill that dominates the skyline of the E end of the Wādī (Fig 26.2, coincides with site GEL 001 on Fig. 26.1). This natural feature has a perfect pyramid shape, rising above a low rocky platform with a black stone surface and to the NW are two further ridges of similar blackstone, which appear to have been foci of occupation in this area of the wadi centre (Fig 26.3-26.4). At the NE end of these, a prominent hilltop settlement (GEL 002) marks the site of 'Old al-Qal'at'.

While a few sites were visited during the 1965 season, more systematic reconnaissance was only carried out in April 1973. This was limited to the location and photographing of sites with limited surface collections. This was another region where selected sites were revisited by the FP in 2000.

***Ills: AF 1*, 30, 246; *AF 2*, Figs 26.1-5.**

Figure 26.6. GEL 002, fortified village, from SW (photo: CMD 1973).

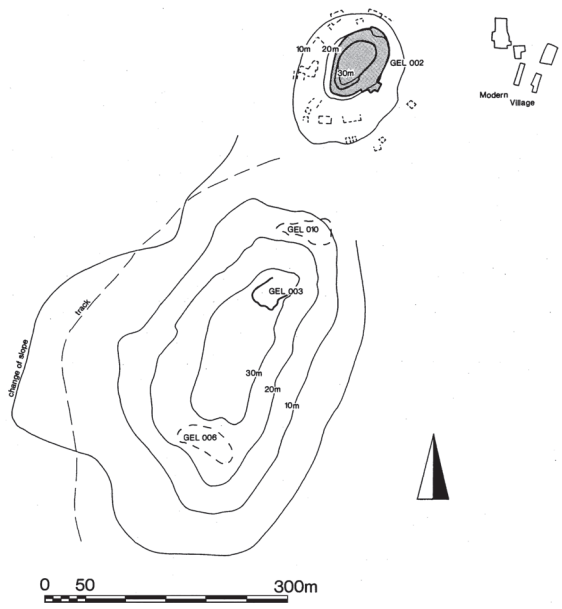


Figure 26.7. General plan of area of GEL 002, enclosure GEL 003 and blackstone ridge, plotted from APs (FP 2000).

GEL 001 Rock art, inscriptions 26°41.14/13°46.13

Numerous carved 'feet', Libyan and Arabic inscriptions, cupmarks and modern graffiti on peak and surrounding slopes of the 'Pyramid'. ***GAR-EMOD***

GEL 002 Enclosed settlement 26°41.88/13°45.68

Enclosed settlement on isolated hilltop. Enclosure wall and densely packed internal structures built largely of mortared unworked black stone. Gateway on SE side of enclosure. Some traces of stone structures were recorded on the lower slopes of the hill, outside the enclosure wall. The site probably represents the predecessor of the modern village situated to the E/SE. ***ISLAM?* EMOD**

***Ills: AF 1*, 146; *AF 2*, Figs 26.3-26.9, *Back cover*.**

GEL 003 Enclosure 26°41.66/13°45.60

Stone enclosure on the N edge of blackstone hill to S of GEL 002. C-shaped enclosure bank *c.*1m high and 1.15-2m wide, open to N. This contains a series of hollows, small platforms and stone banks. Sparse lithic scatters possibly associated with the internal features.

***Ills: AF 2*, Figs 26, 26.10.**

Figure 26.8. GEL 002, detail of interior alleyway (photo: CMD 1965).

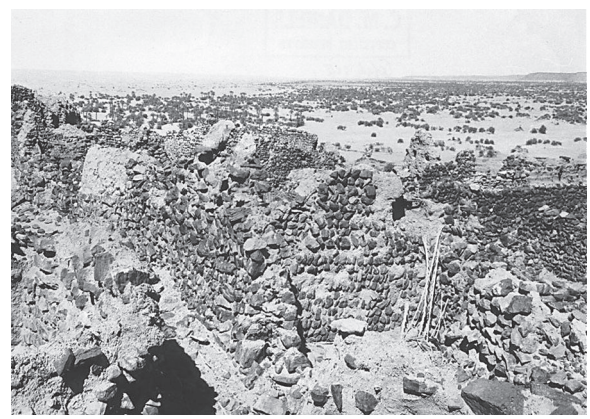


Figure 26.9. GEL 002, stone buildings, looking E (photo: CMD 1965).

Figure 26.10. GEL 003, stone enclosure on hilltop, from GEL 002 (photo: CMD 1965).

Figure 26.11. GEL 004, general view from S (photo: CMD 1973).

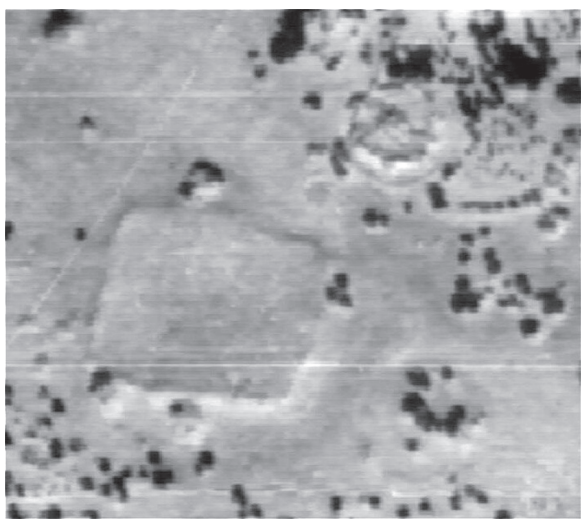


Figure 26.12. Air photograph of GEL 004 and enclosure/settlement GEL 029.

GEL 004 *Qasr*, enclosed settlement 26°42.29/13°47.25

Enclosed *qasr*-type structure constructed of mud and stone. It has an outer enclosure wall with 10 towers, *c.*45m x 41m, with ranges of rooms around its inside face. Within this, a central tower, *c.*20m across. The central tower looks very similar to the *kasba* at Old Jarma in construction and present state of erosion, the whole site being permeated with salt. In 2000, some evidence of recent disturbance of buried rooms. [1973, 2000]. ***ISLAM-EMOD?***
***Ills: AF 2*, Figs 26.11-26.14.**

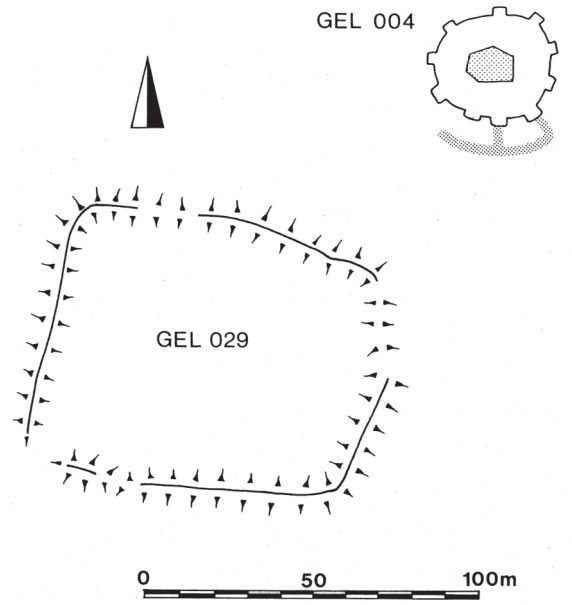


Figure 26.13. GEL 004/029, plot from air photograph (FP 2000).

Figure 26.14. GEL 004, interior of N wall of enclosure (photo: FP 2000).

GEL 005 Enclosed settlement 26°41.64/13°44.80

Enclosed settlement site at W end of rocky hill in Wādī centre. Walls constructed on uncoursed local black stones in mud mortar. Highest wall faces onto hilltop on E side with gate, surviving to *c.*6m. Stone-built internal structures quite well preserved as well as prominent double towers outside main enclosure on southern slopes of hill. Visited by CMD April 1973 but not further studied. Very little sherd material within site. [1973, 2000]. ***GAR-EMOD?***
***Ills: AF 2*, Figs 26.3-26.5, 26.15-26.17.**

GEL 006 Cemetery 26°41.58/13°45.58

A type 2 cemetery area comprising a scatter of 25-30 cairns at S end of blackstone hill. Some are type 1a conical mound cairns and some straight-sided type 3a drum cairns. No surface finds and not further investigated. [1973, 2000]. ***LPAST? GAR?***

Figure 26.15. GEL 005, view across site towards E (photo: FP 2000).

Figure 26.16. GEL 005, view across internal buildings, looking SE towards the 'Pyramid' (photo: FP 2000).

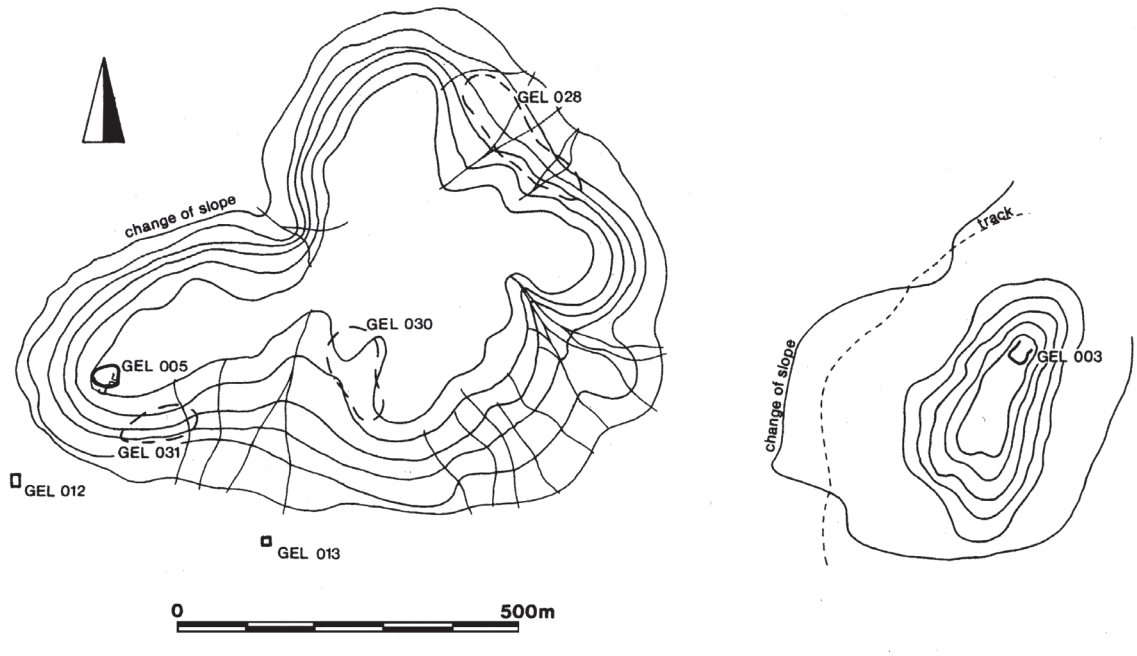


Figure 26.17. Sketch plan of features around GEL 005 (FP 2000).

Figure 26.18. GEL 007, stone features on W slopes of 'Pyramid' hill (photo: CMD 1965).

GEL 007 Settlement? occupation? 26°41.20/13°46.10

There are numerous small stone features, (platforms, mounds, scoops) and other indicators of occupation sites on the N and W lower slopes of 'Pyramid' hill. Scattered lithics suggest many may be of prehistoric date, although others may marks small camp sites (or similar) of more recent periods. [1973, 2000]. **PAST?**
***Ills: AF 2*, Fig. 26.18.**

GEL 008 Cemetery 26°41.50/13°46.60

Scattered cairn graves on hillock to E of 'Pyramid' hill. Not surveyed on the ground. ***LPAST? GAR?***

GEL 009 Cemetery 26°41.50/13°47.00

Scattered cairns on spur to NE of main 'pyramid' ridge. ***LPAST? GAR?***

Figure 26.19. GEL 011, qasr *structure from W (photo: FP 2000).*

Figure 26.20. GEL 024, scattered cairns and other stone features on NE slopes of 'Pyramid' hill (photo: CMD 1965).

GEL 010 Cemetery 26°41.70/13°45.60
Scattered low cairns on N edge of GEL 003. [2000]. ***LPAST? GAR?***

GEL 011 *Qasr*, enclosed settlement 26°42.10/13°47.76
Small eroded *qasr* structure with subcircular enclosure, eroded to near foundation level, and central tower. Central tower includes eroded salt-encrusted mudbrick and limited stonework. [2000]. ***ISLAM-EMOD?***
***Ills: AF 2*, Fig. 26.19.**

GEL 012 *Qasr* 26°41.60/13°44.70
Mudbrick *qasr* to W of GEL 005. Located April 1973 but not further studied. [1973]. ***GAR-EMOD?***

GEL 013 *Qasr* 26°41.48/13°44.89
Very decayed mudbrick *qasr* to S of GEL 005. Subrectangular enclosure *c.*40m x 30m with traces of some internal buildings on S side. Buildings use coarse mudbricks, laid mud blocks and some black stone blocks. [1973, 2000]. ***GAR-EMOD***

GEL 014 Foggara group 26°40.70/13°45.50
Group of 6-7 foggara channels, *c.*500m long. Plotted from APs only. ***GAR***
***Ills: AF 1*, 246.**

GEL 015 Foggara group 26°41.50/13°46.80
Pair of foggara channels running E of 'Pyramid' hill between two blackstone hillocks towards GEL 004 area, 0.5-1.5km long. Plotted from APs only. ***GAR***
***Ills: AF 1*, 246.**

GEL 016 Foggara group 26°41.30/13°47.90
Extensive foggara group of 10-12 channels, 0.8-1.5km long. Plotted from APs only. ***GAR***
***Ills: AF 1*, 246.**

GEL 017 Cemetery 26°40.90/13°46.70
Scattered small cairns along escarpment edge. Not surveyed. ***LPAST? GAR?***

GEL 018 Cemetery 26°40.90/13°47.20
Substantial dispersed cairn cemetery along escarpment edge. Not surveyed. ***LPAST? GAR?***

GEL 019 Cemetery 26°40.90/13°47.70
Substantial dispersed cairn cemetery along escarpment edge. Not surveyed. ***LPAST? GAR?***

GEL 020 Cemetery 26°41.00/13°48.10
Scattered cairns along escarpment edge. Not surveyed. ***LPAST? GAR?***

GEL 021 Cemetery 26°41.40/13°48.40
Large dispersed cairn cemetery along escarpment edge. Not surveyed. ***LPAST? GAR?***

GEL 022 Cemetery 26°41.50/13°49.20
Large dispersed cairn cemetery along escarpment edge. Not surveyed. ***LPAST? GAR?***

GEL 023 Cemetery 26°41.40/13°46.10
Cairn graves on northern slopes of the 'Pyramid'. Not surveyed. ***LPAST? GAR?***

GEL 024 Cemetery 26°41.20/13°46.30
Type 2 dispersed cemetery comprising scattered cairn graves on S and E slopes of the 'Pyramid' hill, including type 3b drum tombs with slab stele and stone bowls. Not further surveyed. [1973, 2000]. ***PUGAR?***
***Ills: AF 2*, Figs 26.20-26.21.**

GEL 025 Foggara group 26°41.60/13°48.70
Cluster of *c.*10 foggara channels *c.*500m long, running towards area of *qasr* (GEL 026). Plotted from APs only. ***GAR***
***Ills: AF 1*, 246.**

Figure 26.21. GEL 024, collapsed drum tomb on E side of 'Pyramid', with stele and stone bowl on E side (photo: CMD 1965).

Figure 26.22. GEL 026, qasr *from SE (photo: FP 2000).*

GEL 026 *Qasr*, enclosure 26°42.16/13°48.46
Subrectangular *qasr* structure *c.*40m across, with outer enclosure. Inner core structure of mudbrick and stone, and very eroded central tower. Ruins stand *c.*8m high in centre of site. Originally identified on APs only, located on ground in 2000 season. [2000]. ***GAR-EMOD?***
***Ills: AF 2*, Fig. 26.22.**

GEL 027 Cemetery 26°41.36/13°48.89
Nucleated Type 4 (?) cemetery of *c.*50-75 shaft burials and cairns on lower escarpment slopes, above well-defined foggara bank. Several displaced 'hands' and 'horns' on surface. Surface pottery predominantly handmade wares. [2000]. **CGAR, LGAR**

GEL 028 Cemetery 26°42.20/13°45.10
Dispersed stone cairns on northeast end of blackstone hill in Wādī centre. Estimated 50+. Not further studied. ***LPAST? GAR?***

GEL 029 Enclosed settlement 26°42.10/13°47.10
Large settlement site to SW of GEL 004 Subrectangular mound, *c.*100m x 80m, rising up to 10m above the surrounding wadi floor in places. The site is somewhat reminiscent of GDB 001 and appears to be another substantial walled Garamantian settlement. Sherding produced no diagnostic material but included some possible Roman imports and Garamantian-type handmade wares. (Originally identified as GEL 4). [1973]. **CGAR**

GEL 030 Cemetery 26°44.80/13°45.00
Dispersed cairn cemetery on W-facing slopes of hilltop. Not surveyed on ground. ***LPAST? GAR?***

GEL 031 Cemetery 26°41.60/13°44.84
Islamic cemetery on hillslopes to SE of GEL 005. [2000]. ***ISLAM***

SECTION 27. IKHLIF [CLEFF] (CLF)

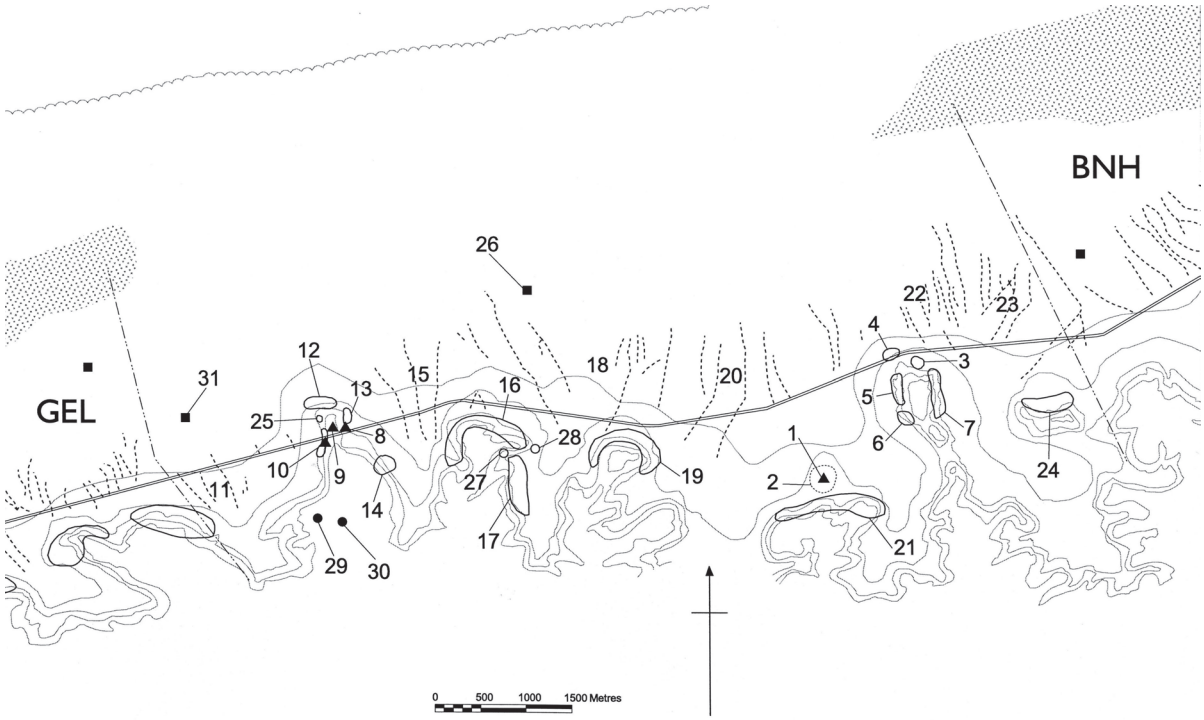


Figure 27.1. Map of sites in Ikhlif sector (CMD/FP).

The small village of Ikhlif, with a number of dependent small settlements) was the main site in this sector in the 1930s (Scarin 1937b, 622 – 279 inhabitants, 5,000 date palms). The first major ancient site noted in the Ikhlif (Cleff) area here was an enclosure around an isolated flat-topped hill close to the escarpment (Cleff or Ikhlif I), noted in 1965. In 1971 further reconnaissance survey in this area investigated a second promontory to the W (Ikhlif II). The team returned there in 1973, when test excavations were carried out at several locations on the hilltop and the surrounding slopes (to be reported more fully in *AF* 3; see also Daniels 1973, 37; 1989, 49-50). Several sites (CLF 003-007) were located on the slopes of another prominent promontory just to the E of Ikhlif I. Its top was examined in 1973 but no traces of any settlement were found there.

***Ills: AF 1*, 30, 246; *AF 2*, Fig. 27.1.**

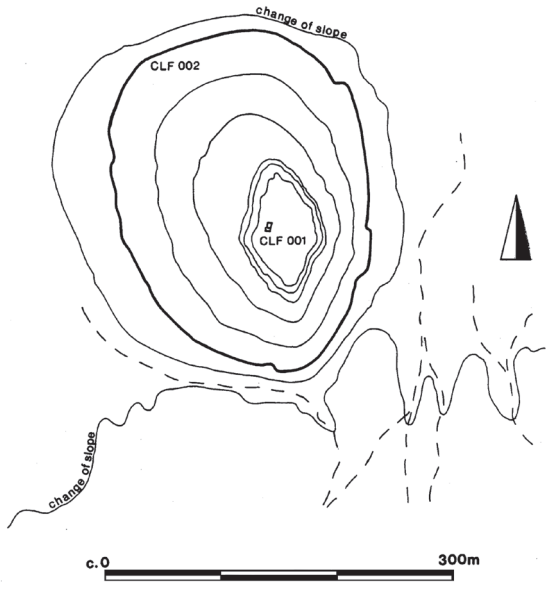


Figure 27.2. CLF 001-002, sketch plan of hill and enclosure, based on AP (CMD/FP).

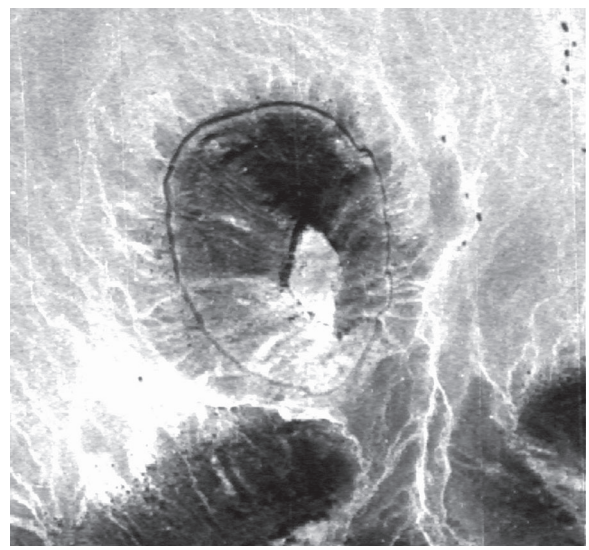


Figure 27.3. CLF 001-002, vertical air photograph.

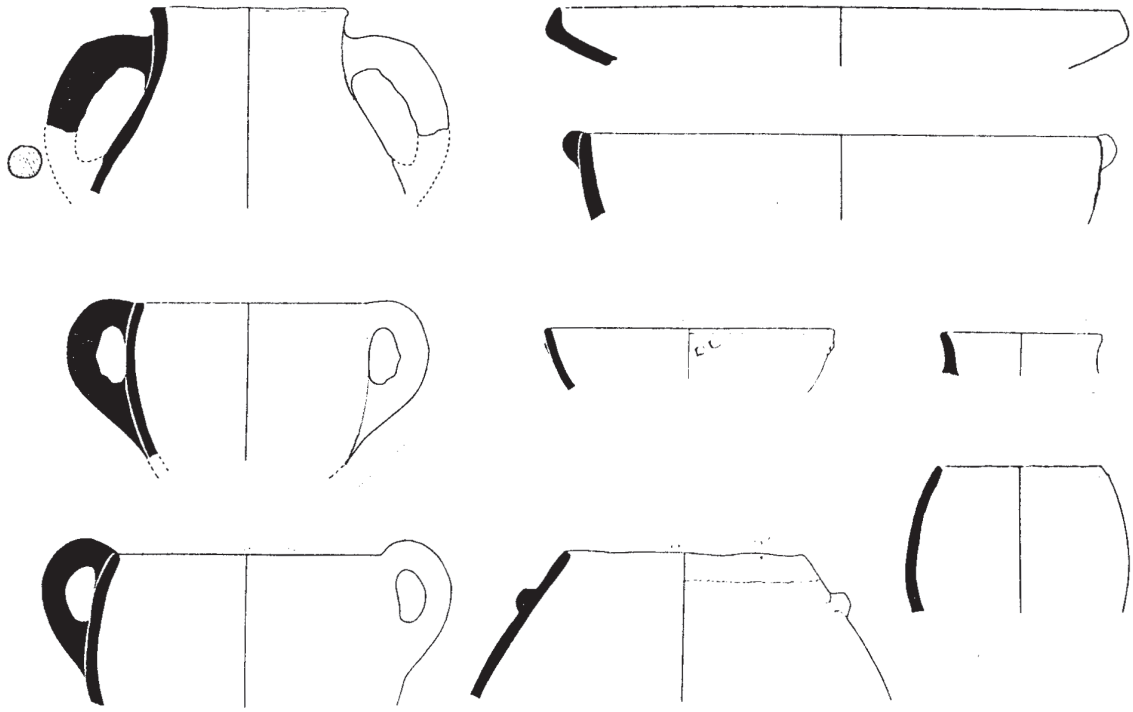


Figure 27.4. CLF 001-002, handmade pottery (CMD/FP).

Figure 27.5. CLF 003 cemetery, from SW (photo: CMD 1973).

Figure 27.6. CLF 003, shaft burial (photo: CMD 1973).

Figure 27.7. CLF 003, displaced type 2a stele (photo: FP 2000).

CLF 001-002 Escarpment settlement **26°42.60/13°52.80**

CLF 001 is a settlement on top of an isolated hilltop, with CLF 002 being a lower area of settlement around the foot of the hill. Remains at CLF 001 include upstanding stone structures thought to be of relatively recent date and possibly earlier occupation. Surface collections made. Not otherwise investigated. (originally registered as CLF I) [1965, 1973].

The CLF 002 settlement area was bounded by a low enclosure wall, *c.*300m NS x 220m EW. Within the enclosure, many small platforms and subcircular rough stone structures. Sketch plans and photographic record made with sample of surface sherds. Pottery almost entirely handmade wares with rare sherds of possible amphorae; some vessel forms indicate a post-medieval or

Figure 27.8. CLF 008-010, plan of the Ikhlif II complex (CMD 1973/FP 2000).

more recent date for this occupation. The site may have originated in early Garamantian times, with occupation at various periods thereafter (registered as CLF I (2) and CLF 2). [1965, 1973]. **EGAR, PUGAR, CGAR, LGAR, ISLAM, EMOD**
***Ills: AF 1*, 141; *AF 2*, Figs 27.2-27.4.**

CLF 003 Cemetery 26°43.70/13°53.27
Large Type 3 nucleated cemetery in slight embayment at N end of promontory; with two main sectors divided by gully. Many type 2b shaft burials, but also some tombs with type 4b rectangular stone superstructures bonded with mud mortar. W side (Area A) has 100+ tombs with 'hands' and offering tables. East side (C) has more but with less stonework from superstructures. Seriously damaged by stone collection for road construction by 1973. [1973, 2000]. **CGAR, LGAR**
***Ills: AF 2*, Figs 27.5-27.7.**

Figure 27.9. CLF 008, settlement on lower terraces on E side of promontory (photo: FP 2000).

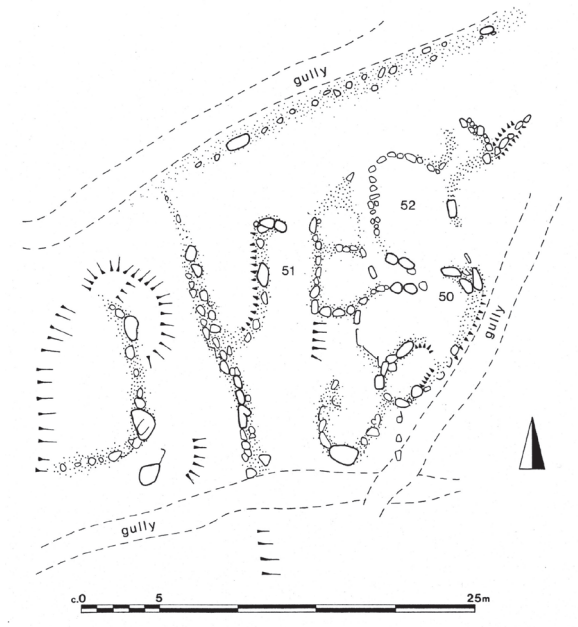


Figure 27.10. CLF 008, plan of structures 50-52, excavated by CMD (CMD/FP).

CLF 004 Cemetery
26°43.80/13°53.10

Small nucleated cemetery to W of CLF 003, bisected by road and almost entirely destroyed by road building and other disturbance. [1973]. **PUGAR**

CLF 005 Cemetery **26°43.40/13°53.10**

Dispersed cemetery of *c.*100-150 cairns along W slopes of promontory, falling into three main groups. Identified on APs only. ***LPAST? GAR?***

CLF 006 Cemetery **26°42.60/13°53.30**

Small cemetery of *c.*60 scattered cairns to S of CLF 005 on SW-facing slopes of promontory. Located on APs only. ***LPAST? GAR?***

CLF 007 Cemetery **26°43.40/13°53.50**

Large dispersed cemetery of estimated 100-150 cairns along E slopes of promontory. Located on APs and not surveyed on the ground. ***LPAST? GAR?***

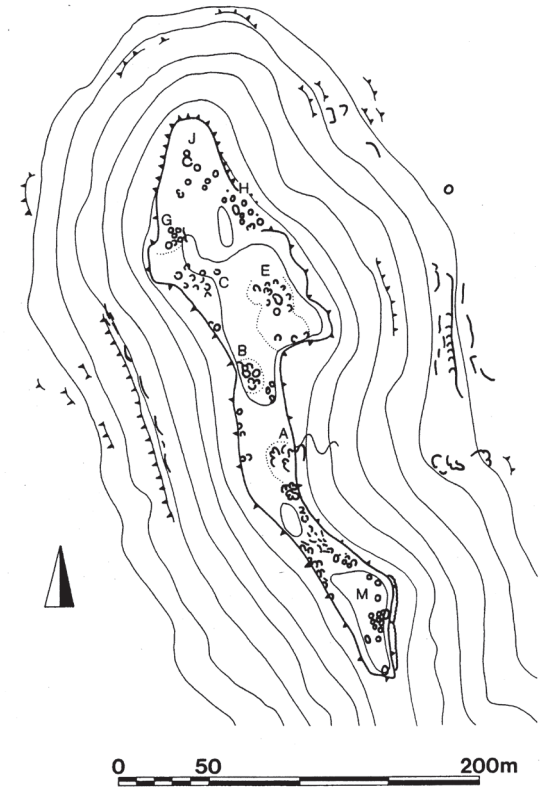


Figure 27.11. CLF 009, plan of features on promontory top (CMD 1973).

CLF 008-10 Escarpment settlement, wall, cemetery **26°41.90/13°49.90**

CLF 008 is the dispersed settlement area of terraces and stone structures along E slopes of a high promontory, enclosed by low stone bank. By 1973, parts of enclosure damaged during road construction. Limited testing of five areas (originally recorded as CL2, areas 50-55) in April and May 1973 revealed some intact occupation deposits, generally only surviving against lower terrace walls. Very little sherd material was found, but some disturbed Mousterian lithics were noted.

CLF 009 is the settlement area on top of narrow spur. Originally identified in field notes as both Cleff II and CL2 Top (1-). The hilltop was first visited in March 1971 and examined in more detail in May 1973 when 12 main occupation areas (Area 1A-M) were identified. Occupation may relate to many periods, with some Holocene lithics, possibly 'Garamantian' material and some probably more recent.

CLF 010 comprises an extensive settlement area of platforms and stone structures along W slopes of the promontory, bounded by very low stone bank running along base of hill. Occasional cairns scattered among them. Lithics noted at several locations along hillside although no relationship to structures established. Limited testing was carried out on several terraces but

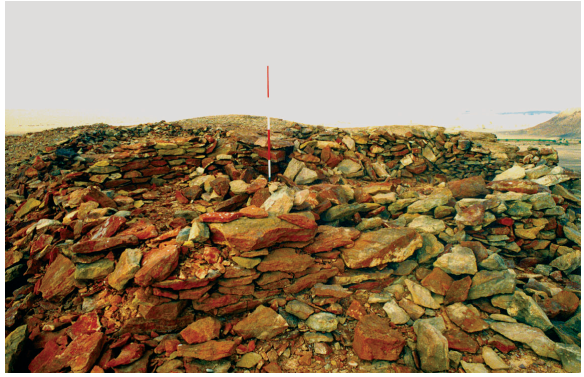


Figure 27.12. CLF 009, view of building within escarpment top settlement (photo: FP 2000).

Figure 27.13. CLF 009, view of building (photo: FP 2000).

these sondages indicated little if any *in situ* occupation deposits surviving. [1969, 1971, 1973, 2000]. **[PAL], LPAST, EGAR, PUGAR, CGAR**
***Ills: AF 1*, 24, 141; *AF 2*, Figs 27.8-27.13.**

CLF 011 Foggara group 26°42.00/13°49.30
Small group of 3-4 foggara channels in area *c.*500m wide; traceable over distance of *c.*800m from AP plots. ***GAR***
***Ills: AF 1*, 246.**

CLF 012 Cemetery 26°42.10/13°49.90
Nucleated cemetery on the north slopes of Ikhlif II promontory, in three distinct groups. By 1973, only a fraction of the W side of cemetery survived, the rest being largely destroyed during the construction of the new road. Some 'hands' and tables noted, some *in situ*, and surface sherds collected. Several 'hands' were located on the W side of shaft graves. There was also a scatter of other cairns along the hill slopes here and around the W side of the promontory, presumed earlier (originally CL2, cem 41-3) [1971, 1973]. **CGAR**

CLF 013 Cemetery 26°42.10/13°50.00
Scatter of cairns on NE end of promontory, possibly an extension of dispersed cairns above CLF 012. [1973]. ***LPAST? GAR?***

CLF 014 Cemetery 26°42.20/13°50.30
Dispersed cemetery of estimated 100 cairns on N and E-facing slopes of headland. Identified on APs only. ***LPAST? GAR?***

CLF 015 Foggara group 26°42.30/13°50.40
Group of four channels on W side of headland, traceable over *c.*1-1.2km. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

CLF 016 Cemetery 26°42.40/13°50.80
Extensive spreads of estimated 200-250 dispersed cairns along NW and N side of escarpment bloc. Identified on APs only. ***LPAST? GAR?***

CLF 018 Foggara group 26°42.50/13°51.40
Cluster of 8-10 channels, with some linkages, spread over *c.*1.5km, possibly serving two main areas. Maximum length of 1.6km running up to escarpment edge. Some lengths of foggara banks still upstanding in agricultural areas in 2000. ***GAR***
***Ills: AF 1*, 246.**

CLF 019 Cemetery 26°42.20/13°51.50
Cemetery of estimated 100 dispersed cairns mainly along N slopes of headland, with a small number around W and E sides. Identified on APs only. ***LPAST? GAR?***

CLF 020 Foggara group 26°42.40/13°52.40
Group of 7-8 foggara channels, spread over *c.*1.5km. Channels traceable for up to 1.8km long; plotted from APs only. ***GAR***
***Ills: AF 1*, 246.**

CLF 021 Cemetery 26°42.00/13°52.80
Thin scatter of *c.*25-30 cairns along escarpment slopes to S of hillside settlement at CLF 001-2. identified on APs and not surveyed on ground. ***LPAST? GAR?***

CLF 022 Foggara group 26°42.90/13°53.70
Cluster of 5-6 foggara channels on E side of Ikhlif headland. Channels traceable over *c.*1km. ***GAR***
***Ills: AF 1*, 246.**

CLF 023 Foggara group 26°43.00/13°54.30
Group of 6-7 foggara channels spread over *c.*1km at E end of Ikhlif. Traceable over *c.*800m. Plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

CLF 024 Cemetery 26°42.60/13°54.10
Small dispersed cemetery of 15-20 cairns scattered along higher escarpment slopes. ***LPAST? GAR?***

CLF 025 Cemetery 26°42.00/13°49.90
Nucleated Type 3 cemetery on W side of Ikhlif II promontory, on lower slopes. By 1973, lower parts of

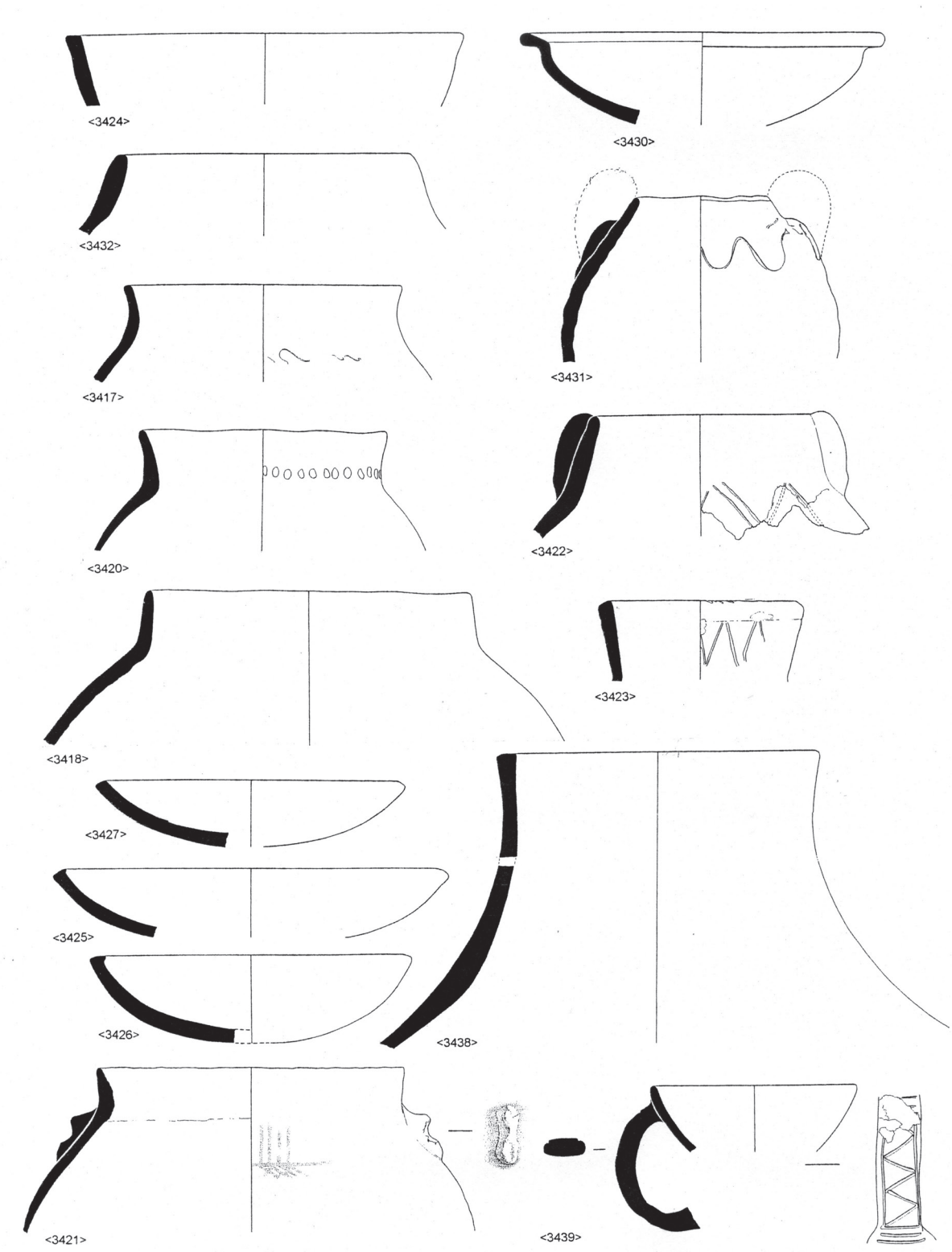


Figure 27.14. CLF 025, pottery from cemetery surface (CMD/FP).

Figure 27.15. CLF 026, general view of qasr *looking E (photo: FP 2000).*

Figure 27.16. CLF 026, general view of qasr *looking N (photo: FP 2000).*

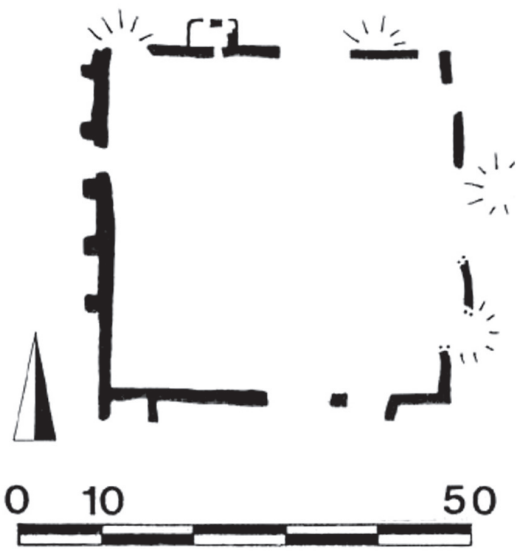


Figure 27.17. CLF 026, sketch plan of qasr *(FP 2000).*

cemetery largely destroyed by bulldozing. Few sherds found in that area. Stele and offering tables present, some recently smashed. A few tombs preserved in upper parts of cemetery, but many burials presumably in shaft burials. Pottery includes many straight-necked handmade jars, shallow bowls, imported coarsewares and RS, also unusual green glazed jar <3431>. (Originally CL2, cemetery 40). [1971, 1973]. **CGAR**
***Ills: AF 2*, Fig. 27.14.**

CLF 026 *Qasr*, settlement? 26°42.00/13°50.96
Heavily decayed *qasr* structure built against spring mound. Substantial areas of collapsed walls. Plan and recording in 2000 revealed a roughly 40 x 40m square (0.16ha) enceinte with projecting rectangular towers. The plan is very similar, though on a slightly smaller scale to that encountered at LEK 017 and GDD 005, while the size is almost identical to the heavily ruinous *qasr* GBD 008. [FP 2000]. ***GAR-EMOD?***
***Ills: AF 1*, 148; *AF 2*, Figs 27.15-27.17.**

CLF 027 Cemetery 26°42.24/13°50.84
Small linear cluster of shaft graves on W side of small embayment. Distinct from dispersed larger cairns on upper escarpment slopes (CLF 016). Surface sherds include RS. [2000]. **CGAR**

CLF 028 Cemetery 26°42.27/13°50.99
Small Type 4 nucleated cemetery of 15-20 shaft graves. No superstructures survive but two 'hands' noted. [2000]. **CGAR**

CLF 029 Lithics scatter 26°41.90/13°50.00
Extensive spread of lithic working debris apparently on escarpment top SE of promontory. Part of handaxe noted. Location requires confirmation. [1973]. **PAL**

CLF 030 Lithics scatter 26°41.90/13°50.30
Extensive spread of lithic working debris on escarpment top to E of CLF 029. Location requires confirmation. [1973]. **PAL**

CLF 031 *Qasr*? 26°42.40/13°49.00
Possible *qasr* site located on APs. Large rectangular enclosure estimated 50-60m square with possible corner towers and some standing structures in centre. Not identified on the ground. ***GAR-EMOD?***

SECTION 28. BIN ḤĀRITH [BEN HARETH] (BNH)

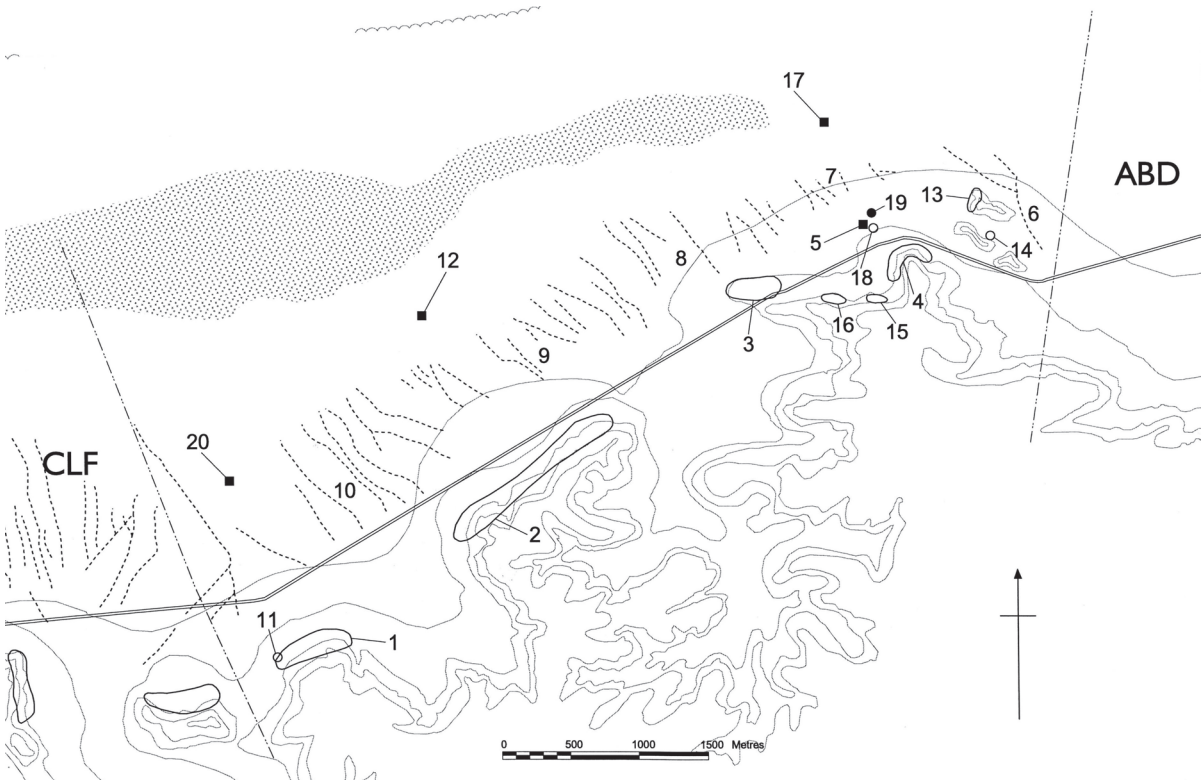


Figure 28.1. Map of sites in Bin Ḥārith sector (CMD/FP).

The area between Ikhlif and al-Abyad had very little permanent settlement or cultivation in the late 1930s, with only a scatter of farms and no villages around Bin Ḥārith (Scarin 1937b, 622). At that time much of the Wādī centre was an open plain, with a belt of scrub and spring mounds along the S side of the mud flats which extend over some 5km. AP coverage of 1958 shows a small lake of standing water in the centre of the mud flats. The E end of the Wādī was only briefly visited during the initial reconnaissance seasons and the only site inspected on the ground was the unusual site of Bin Ḥārith (BNH 005), located on an isolated hill which commands spectacular views to E and W, recorded in 1962 (Fig 28.2).

Figure 28.2. BNH 005, hilltop structure and enclosure, looking NW (photo: CMD 1963).

The area was briefly revisited in 2000 and the escarpment around Bin Ḥārith was re-examined, confirming that, as CMD had suggested, the density of archaeological sites was relatively thin. By this time, the main road into the Wādī had been shifted to N of the hill and there has been a considerable expansion in agriculture in the Wādī centre, masking or destroying many of the foggara channels which were visible in the 1960s.

***Ills: AF 1*, 30, 246; *AF 2*, Figs 28.1-28.2.**

BNH 001 Cemetery 26°42.70/13°54.70
Dispersed cemetery of scattered cairns along the escarpment edge. Not surveyed on the ground. ***LPAST? GAR?***

BNH 002 Cemetery 26°43.50/13°55.60
Dispersed cemetery of *c.*75-100 scattered cairns along escarpment edge. Not surveyed on the ground but appear quite well preserved. ***LPAST? GAR?***

BNH 003 Cemetery? 26°44.26/13°56.28
A few low mound cairns lie around the base of the two hillocks here. There is evidence for quarrying, which is probably of quite recent date, with some graffiti. ***LPAST? GAR?***

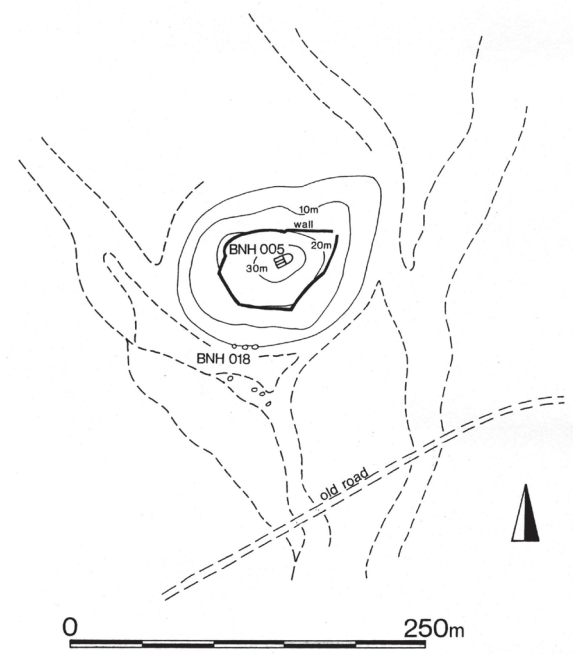


Figure 28.3. BNH 005, general plan, plotted from AP coverage, with old road to S of hill (FP 2000).

Figure 28.4. BNH 005, view from central tower towards E entrance (photo: FP 2000).

Figure 28.5. BNH 005, central tower, from W (photo: CMD 1963).

BNH 004 Cemetery **26°44.50/13°56.90**

Dispersed amorphous type 1a mound cairns scattered around W, N and E slopes of headland. Generally located quite high up the hill slopes, some graves are built into the hillside or against boulders. Some small stone-lined cist substructures visible beneath robbed examples. No surface pottery. ***LPAST? GAR?***

BNH 005 *Qasr*, enclosed settlement, well, inscriptions **26°44.54/13°56.66**

This isolated hill forms a prominent landmark close to the E end of the Wādī. The lower hilltop was surrounded by a small enclosure, containing a well, constructed of a combination of large set blocks/slabs and low rubble walls, measuring *c.*75m x 55m. In some places, these orthostats have a markedly pointed shape, giving the appearance of a crenellated form to the enclosure. The gateway on the E end of the hill was more substantially constructed, bounded by two large blocks of roughly coursed stonework.

The single structure on the top of the hill comprised a rounded enclosure measuring *c.*12m x 7m. At its W end was a two-storey tower, with three rooms at each floor, at the W end (the site is rather crudely depicted in Scarin 1934, 88). Traces of roof beams survived indicating a low ceiling at ground floor level. Much of the SW corner of the structure had collapsed although the line of a doorway, entering the central room was preserved.

The internal walls are of irregular undressed stone, bonded with a mud mortar. Some blocks have incised Libyan inscriptions on, perhaps reused here. The internal walls all were butted onto the outer wall and survive to a height of *c.*4m.

The unusual construction of the enclosure wall suggests that it might not be primarily defensive and the site remains difficult to interpret. An AMS date on timber in the internal walls of the main structure (OxA-9824: 582±35BP) suggests that the extant building could date back to the 13th-15th century AD, though there are indications that the enclosed site could be older – perhaps Garamantian. [1962, 2000]. ***GAR?***
ISLAM, *EMOD*
***Ills: AF 1*, 323; *AF 2*, Figs 28.2-28.9.**

BNH 006 Foggara group **26°44.70/13°57.50**

Isolated foggara channel, bifurcating as it reaches Wādī centre, up to 1.2km long. Still visible in some parts in 2000. [2000]. ***GAR***
***Ills: AF 1*, 246.**

BNH 007 Foggara group **26°44.90/13°56.70**

Cluster of 5-6 foggara channels running N of BNH 005. Some elements still survive in 2000.[2000]. ***GAR***
***Ills: AF 1*, 246.**

Figure 28.6. BNH 005, courtyard and tower of main structure (photo: FP 2000).

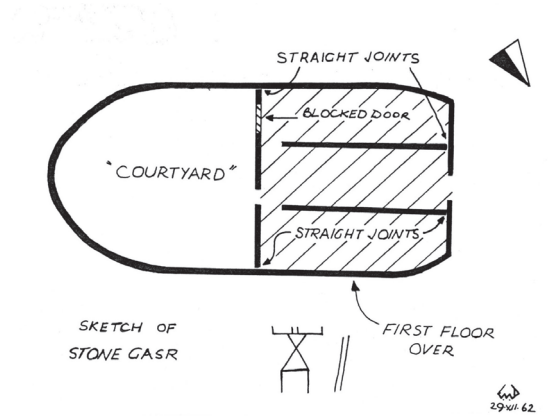


Figure 28.7. BNH 005, sketch plan of central building (CMD 1962).

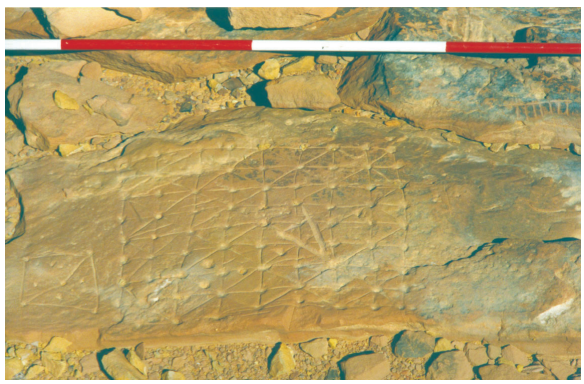


Figure 28.8. BNH 005, gaming board engraved in rock (photo: FP 2000).

BNH 008 Foggara group 26°44.50/13°56.30
Cluster of 5-6 foggara channels 400-700m long, plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

BNH 009 Foggara group 26°44.00/13°55.60
Cluster of 10-12 foggara channels 500-600m long, plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

Figure 28.9. BNH 005, well near main entrance (photo: FP 2000).

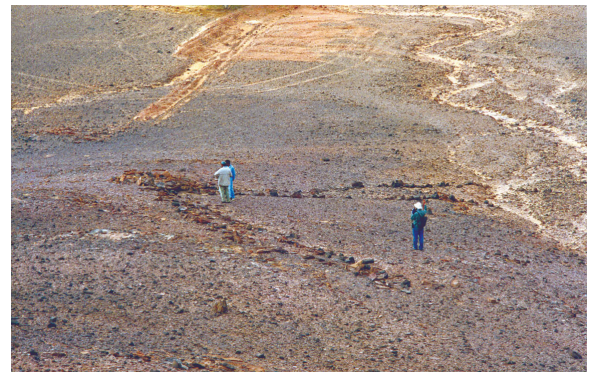


Figure 28.10. BNH 011, antenna tomb (photo: FP 2000).

BNH 010 Foggara group 26°43.40/13°55.00
Cluster of about eight foggara channels up to 800m long, plotted from APs. ***GAR***
***Ills: AF 1*, 246.**

BNH 011 Antenna tomb 26°42.67/13°54.41
Well-preserved structure at the foot of the escarpment slope with two 'arms' *c.*21-23m long, with central ring *c.*2.5m in diameter. A small orthostat was located on the E side of the structure on a bearing of *c.*80°. [2000].
LPAST
***Ills: AF 2*, Fig. 28.10.**

Figure 28.11. BNH 012, qasr *(photo: FP 2000).*

Figure 28.12. BNH 014, antenna tomb (photo: FP 2000).

Figure 28.13. BNH 017, qasr *(photo: FP 2000).*

BNH 012 *Qasr* **26°44.01/13°55.04**
Small mudbrick *qasr* site close to salt flats. Subrectangular structure *c.*10m square, with elements of walling surviving up to 7m tall; much of N wall collapsed. [2000]. ***ISLAM-EMOD?***
***Ills: AF 2*, Fig. 28.11.**

BNH 013 Cemetery **26°44.62/13°57.07**
Scatter of type 1a mound cairns on the W and S slopes of hill. These all appear robbed and no dating material was found. [2000]. ***LPAST? GAR?***

Figure 28.14. BNH 019, incised biconical figure (photo: FP 2000).

BNH 014 Antenna tomb **26°44.51/13°57.17**
Elements of probable 'antenna tomb' in open ground below hillock, in area heavily disturbed by stone quarrying. Northern 'arm' of tomb, *c.*16m long, survives, constructed with two lines of small set stones/orthostats bounding a core of stone chips and gravel. The southern part of the structure has been totally destroyed where the surface has been cleared of all loose stone. [2000]. ***LPAST***
***Ills: AF 2*, Fig. 28.12.**

BNH 015 Cemetery **26°44.27/13°56.61**
Small group of *c.*30 type 1 mound cairns on lower escarpment slopes to W of BNH 004. Some examples robbed and occasional fragments of bone on surface but no pottery. Some graves masked in blown sand accumulating in the lee of the hill slope. No dating evidence. [2000]. ***LPAST? GAR?***

BNH 016 Cemetery **26°44.26/13°56.41**
Small group of *c.*10 type 1 mound cairns in sheltered NE facing area of escarpment slope. No dating evidence. [2000]. ***LPAST? GAR?***

Figure 28.15. BNH 019, engraved bovids (photo: FP 2000).

BNH 017 *Qasr* 26°44.94/13°56.57
Qasr structure to NW of BNH 005. Very poorly preserved as irregular subrectangular enclosure *c.*25 x 20m, with possible towers on N side and mudbrick buildings in SE side. [2000]. ***GAR-EMOD?***
***Ills: AF 2*, Fig. 28.17.**

BNH 018 Cemetery 26°44.53/13°56.69
A small number of amorphous type 1a mound cairns are scattered around the base of BNH 005. No finds or dating evidence. [1962, 2000]. ***LPAST? GAR?***

BNH 019 Rock art 26°44.56/13°56.68
Cluster of drawings and graffiti on exposed rock around BNH 005. These include groups of biconical humans, bovines and giraffe, 'spears', cupmarks and 'feet'. [2000].
PAST, GAR, GAR-EMOD
***Ills: AF 1*, 294; *AF 2*, Figs 28.14-28.16.**

Figure 28.16. BNH 019, incised 'spear' symbols (photo: FP 2000).

BNH 020 *Qasr*? Enclosure 26°44.50/13°55.40
Possible *qasr* site identified on APs. Irregular subcircular enclosure (similar to GEL 004?) with possible central structures. Not located on ground. ***GAR-EMOD?***

SECTION 29. AL-ABYAḌ [EL-ABIAD] (ABD)

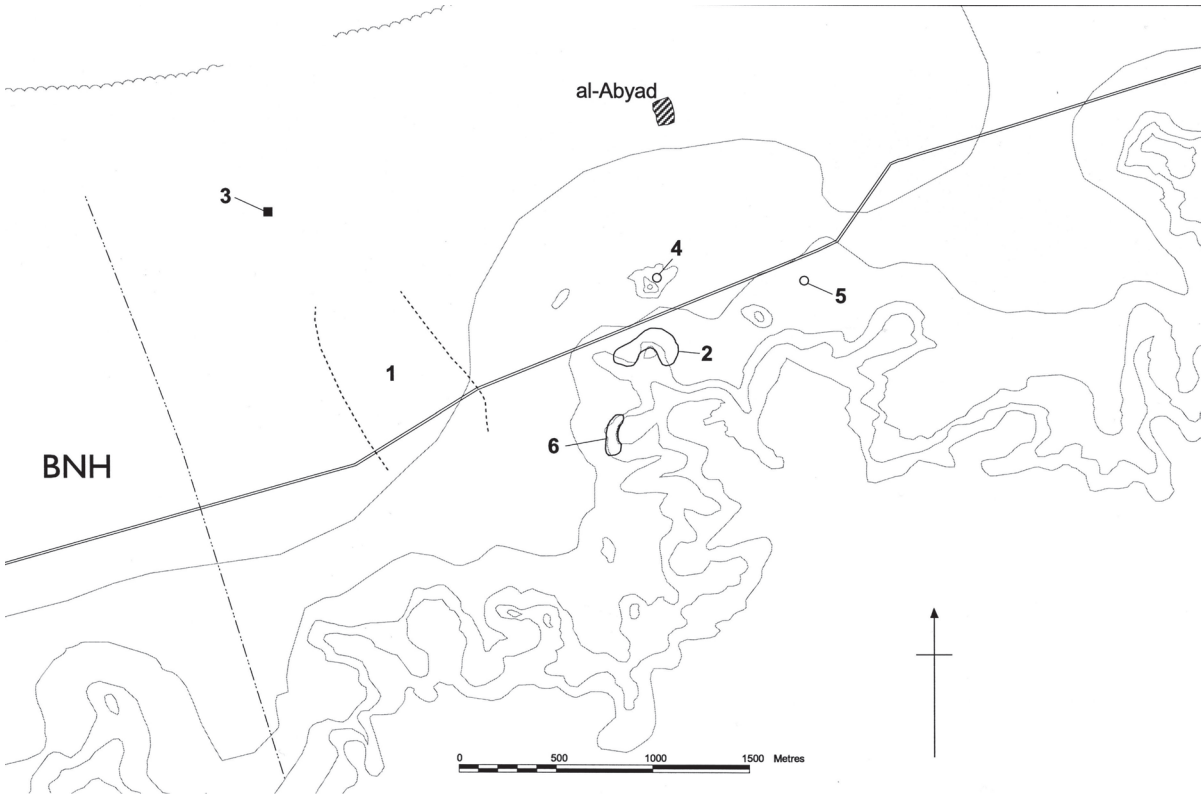


Figure 29.1. Map of sites in al-Abyaḍ sector (CMD/FP).

This area marks the E end of the Wādī, with small settlements at Sīdī 'Alī, al-Ḥamrā' and a slightly larger village al-Abyad. (Scarin 1937b, 622 – 165 inhabitants, 3,000 palms). Scarin (1934, 94) noted similarities in plan between this elliptical enclosed village and the villages of the Sabhā depression to the NE and recorded brief details of its mosque and *zawiya* (1934, 101-03). The area was only superficially surveyed by CMD, who located a few cemeteries (Figs 29.2-29.3), although their exact position is uncertain. In 1965, CMD noted that the "tombs by el-Abiad are small, oblong, rectangular mounds of stone ... their orientation is varied N/S and E/W". No finds were found with them or evidence for robbing. A small number of possible archaeological features can be identified on the APs. The location of graves tested by Caputo (Pace *et al.* 1951, 377-81) in this area remains uncertain, but most likely comprised two burials in ABD 002 and one in ABD 006.

***Ills: AF 1*, 30, 246; *AF 2*, Figs 29.1-29.3.**

Figure 29.3. Flat-topped mound cairn in al-Abyaḍ area (photo: CMD 1965).

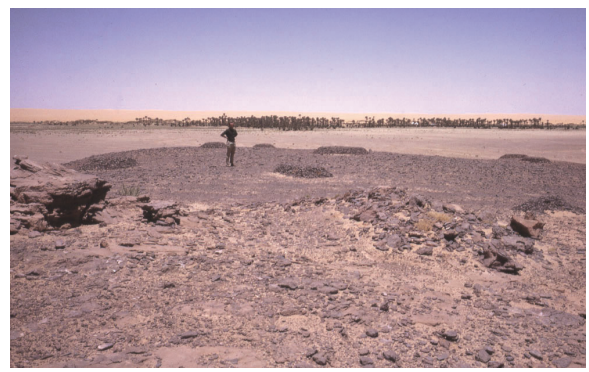


Figure 29.2. Cairns in al-Abyaḍ area (photo: CMD 1965).

ABD 001 Foggara group 26°44.90/13°58.90
Pair of foggara channels 1-2km long. Located on APs only. ***GAR***
***Ills: AF 1*, 246.**

ABD 002 Cemetery 26°45.20/14°00.00
Group of *c.*20-30 scattered cairns on lower slopes on N and E side of hill. Identified on APs only. ***LPAST? GAR?***

ABD 003 *Qasr*? Enclosure? 26°45.30/13°58.70
Possible *qasr* site located on APs, near al-Hamra. Large rectangular enclosure on SW side of sāniat with only parts of walls upstanding. Estimated *c.*50m square with no internal structures apparent. ***GAR-EMOD?***

ABD 004 Cemetery 26°45.40/13°59.80
Small group of estimated 25-35 scattered cairns. Identified on APs only. ***LPAST? GAR?***

ABD 005 Cemetery 26°45.40/14°00.56
Small group of estimated 20-30 scattered cairns on isolated hill. Identified on APs only. ***LPAST? GAR?***

ABD 006 Cemetery 26°44.90/13°59.80
Small group of estimated 25-35 scattered cairns along base of hillside on W and S-facing slopes. Identified on APs only. ***LPAST? GAR?***

c) Outlying districts

SECTION 30. BI'R BAQQĀRĀ [BIR BAGIRA] (BBG)

There were no permanent early modern settlements in the Wādī Barjūj (Scarin 1937b, 628). No systematic survey was carried out by CMD in the Wādī Barjūj and he did not investigate the area of well-known rock art from the S flank of the Massāk Ṣaṭṭafat investigated by Frobenius and others (Frobenius 1937; Lutz and Lutz 1995a; van Albada and van Albada 2000). CMD's only foray into this area appears to have been with a 1968 British army (Near Eastern Land Forces) expedition to the Murzuq area (Daniels 1971a, 268-71; 1989, 58). Some further reconnaissance work was carried out in this area by FP in 1999 and 2000. The recorded archaeology must represent only a very small proportion of actual numbers of human activity sites, though the area appears to have been largely beyond the geographical limits of ancient oasis cultivation – the one exception to this may be represented by the cluster of cemeteries and a single *qasr* at Bi'r Baqqārā. This appears to be an outlier of the Garamantian settlement complex of the Qaṣr ash-Sharrāba area. Bi'r Baqqārā also appears in reports as 'Agamennan'. We must thank Mike Keane for drawing our attention to site BBG 010.
***Ills: AF 2*, Fig. 0.3.**

BBG 001 Cemetery
Cemetery of 20-30 graves on end of spur NE of *qasr*. No further details. [1968, 1999]. ***LPAST? GAR?***
***Ills: AF 2*, Figs 30.1-30.2.**

BBG 002 Cemetery
Large Type 5 cemetery of 100+ type 3a drum cairns. Some RS and BR pottery noted. Large stone slabs were used to seal some graves, others have been disturbed by robbing. [1968, 1999]. **CGAR**
***Ills: AF 1*, 199; *Ills: AF 2*, Figs 30.3-30.4.**

BBG 003 Cemetery
Type 5 cemetery of 40-50 graves including 'beehive' drum tombs (type 5e?) and type 3a circular drum cairns. [1968]. **CGAR**

BBG 004 Occupation?
Neolithic material on lower slopes to east of BBG 003. Some associated 'Neolithic' tombs? No further details. Some lithics collected. [1968]. **PAST**

BBG 005 Occupation?
'Neolithic' material on 'south slopes'. No further details. [1968]. **PAST**

Figure 30.1. BBG 001, cemetery (photo: CMD 1968).

Figure 30.3. BBG 002, general view of cemetery (photo: FP 1999).

Figure 30.2. BBG 001, general view of cemetery (photo: FP 1999).

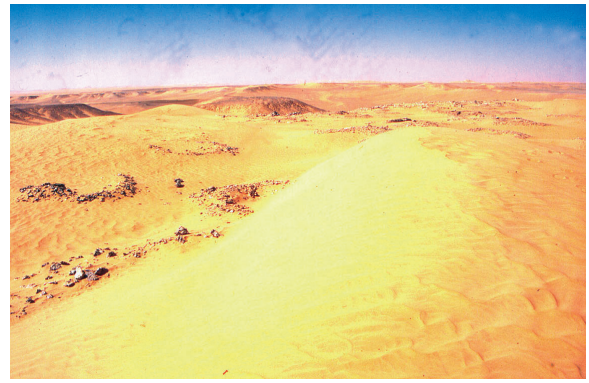


Figure 30.4. BBG 002, drum cairns partially buried by sand (photo: FP 1999).

BBG 006 *Qasr*
Qasr site close to well. No further records and not relocated in 1999. [1968]. ***GAR-EMOD?***

BBG 007 Antenna tomb 26°03.73/12°58.36
An E-facing antenna tomb, with some Holocene lithics possibly associated. Eleven stone pieces were collected including two mid-Holocene scrapers. All pieces were very abraded. [2000]. **M-LPAST**
***Ills: AF 2*, Figs 30.5-30.6.**

Figure 30.5. BBG 007, antenna tomb, looking SW (photo: FP 2000).

Figure 30.6. BBG 007, antenna tomb, looking NW (photo: FP 2000).

BBG 008 Occupation 25°55.46/13°10.58
An extensive scatter (at least 100 x 100m) of Holocene lithics, pottery and grindstones in a low sand-filled depression about 7km NW of Bi'r Baqqārā. A probable Pastoral campsite. [2000]. **PAST**

BBG 009 Cairn 25°56.79/13°12.38
A prominent type 3b drum tomb on an isolated bluff to the NW of BBG 010. The cairn is *c.*3m diameter x *c.*50cm high, with some horizontally laid paving around its exterior. It can be seen from some km distance. Close by are two other rougher cairn burials. [2000]. ***LPAST? GAR?***

BBG 010 Antenna tomb 25°56.42/13°12.88
A large antenna tomb situated on a W-facing bluff within the Wādī Barjūj a few km NW of Bi'r Baqqārā. The arms are *c.*50m (160°) and 30m (10°) long and the monument faces nearly E (100°). The arms are quite slender (*c.*50cm wide, 40cm between parallel lines of edge-set stones). The edging stones are carefully selected whitish stones, whilst the infill between them consists of brownish stones, over a layer of horizontally bedded whitish slabs. All the coloured stones have been collected elsewhere and specially brought to the site as they do not correspond to the natural surface cover. At the SE end of the SE arm, there is a circular terminal, but the equivalent end of the NE arm is lost. The central burial consists of a low platform of horizontally

Figure 30.7. BBG 011, lithics and grindstones (photo: FP 1999).

Figure 30.8. BBG 011, stone structures (photo: FP 1999).

laid slabs, within a 5m wide circle of edge set stones. There is a circular cairn towards the E (front) edge of the structure and another cairn just off the platform to the N. There are indications of a further small structure placed due E of the central platform, with a further cairn in line at a distance of *c.*75m on a bearing of 100°. There are no finds, obviously associated with the structure, save a few possibly holocene lithic flakes and a small fragment of a grindstone. [1999, 2000]. **PAST, *LPAST***

BBG 011 Occupation? 25°30.93/13°19.72
A dense cluster of stone structures on a low ridge overlooking a possible palaeolake within an interdune corridor in the edge of the Murzuq sand sea, S of Bi'r Baqqārā. The structures (*c.*50 x 30m) appear to represent settlement rather than graves, and are associated with Holocene lithics and grindstones. [1999]. **PAST**
***Ills: AF 2*, Figs 30.7-30.8.**

BBG 012 Cemetery? 25°48.59/13°16.55
A series of small cairns near a palaeolake in an interdune corridor in the N edge of the Murzuq sand sea. [1999]**.**
LPAST? GAR?

BBG 013 Lithics scatter 25°56.64/13°07.95
Palaeolake on the northern edge of the Murzuq sand sea. The collected lithics at this site include a waisted axe, a bifacially flaked axe and an unfinished arrowhead. Although only seven pieces were retrieved there are four different types of raw material present. This site is probably Middle/late Pastoral in age. [2000]. M-LPAST

Figure 30.9. BBG 014, lithics (photo: FP 1999).

BBG 014 Lithics scatter 25°47.96/13°16.16
Extensive spread of Holocene lithics, early pottery, grindstone fragments by a palaeolake in an interdune corridor in the Murzuq sand sea, S of the Wādī Barjūj corridor near Bi'r Baqqārā. The collected lithics were not very diagnostic, a single blade endscraper and several blades. Mostly heavily abraded. [1999]. **PAST**
***Ills: AF 2*, Fig. 30.9.**

SECTION 31. QAṢR MĀRA [GASR MARA] (MAR)

Figure 31.1. Map of sites in Qaṣr Māra sector (CMD/FP).

Figure 31.2. MAR 001, Qaṣr Māra (photo: CMD 1968).

Figure 31.3. MAR 001, from S (photo: FP 2000).

The area was visited by CMD in 1968 when limited recording of sites was made with some surface collections. The retreat of agriculture out of the W end of the Wādī 'Utba towards the village of Tsāwa on the modern main road between Fjayj and Murzuq has left Qaṣr Māra in the middle of nowhere. However, in Garamantian times it lay on a direct line between the Bāb al-Maknūsa pass linking the Wādī al-Ajāl with the western end of the Wādī 'Utba and the major Garamantian and early Islamic town at Qaṣr ash-Sharrāba. The site was relocated by the FP in 1999 and further study carried out in 2000 (Edwards 2001, 53-54).
Ills: AF 1, **350; *Ills: AF 2*, Figs 31.1-31.2, 34.1.**

MAR 001 *Qasr*, settlement, enclosures **26°01.53/13°22.42**

Settlement site of several enclosures situated on an area of raised ground towards S side of the wadi. The central feature of the site is a *qasr* built of mudbrick on rough stone foundations with a near square plan measuring *c.*7.6-8.15m and *c.*2-2.5m high. Much of superstructure collapsed but elements of internal dividing walls survive.

The *qasr* lies within a rectangular enclosure with low stone walls max.1.5m high. Some elements of walling on N side may include mudbrick. A wall running off its S side was *c.*30cm wide. W wall of complex *c.*35cm wide of

Figure 31.4. MAR 001, W side showing stone foundations (photo: CMD 1968).

pitched stones, with S end, possibly an earlier phase than N end, largely robbed out. Several sand-filled depressions (marked 'd' on Fig. 31.5) have some indications of associated walls, but significance uncertain). Enclosure on E side marked by very slight banks *c.*1m across, appears to postdate the central enclosure around *qasr*. Two sherds RS and handmade pottery found inside it.

Small mound on SW side of site had small fragments of bone associated with it from a disturbed burial. A further mound (D: *c.*1m) on N side of site may also represent a grave, of unknown date. CMD considered the site Islamic in date (Daniels 1989, 58), but finds of Garamantian pottery and now an AMS date require a re-evaluation. The AMS date, on sample of organic material from a mudbrick taken from the *qasr* (OxA-9940: 1600±40BP), indicates a date in the 4th-6th century AD, though this need not be primary construction. [1968, 1999, 2000].
CGAR, LGAR, ISLAM
***Ills: AF 1*, 148, 151-52, 170; *AF 2*, Figs 31.1-31.6.**

MAR 002 Cemetery
Small Type 5 cemetery with two groups of graves (a) cluster of five small type 3a drum cairns, D: *c.*2m. (b) 15+ type 3b drum tombs, to W, some with flat tops packed with small stones, D: *c.*2-3m. No stele or offering tables. [1968]. ***GAR?***
***Ills: AF 2*, Figs 31.7-31.8.**

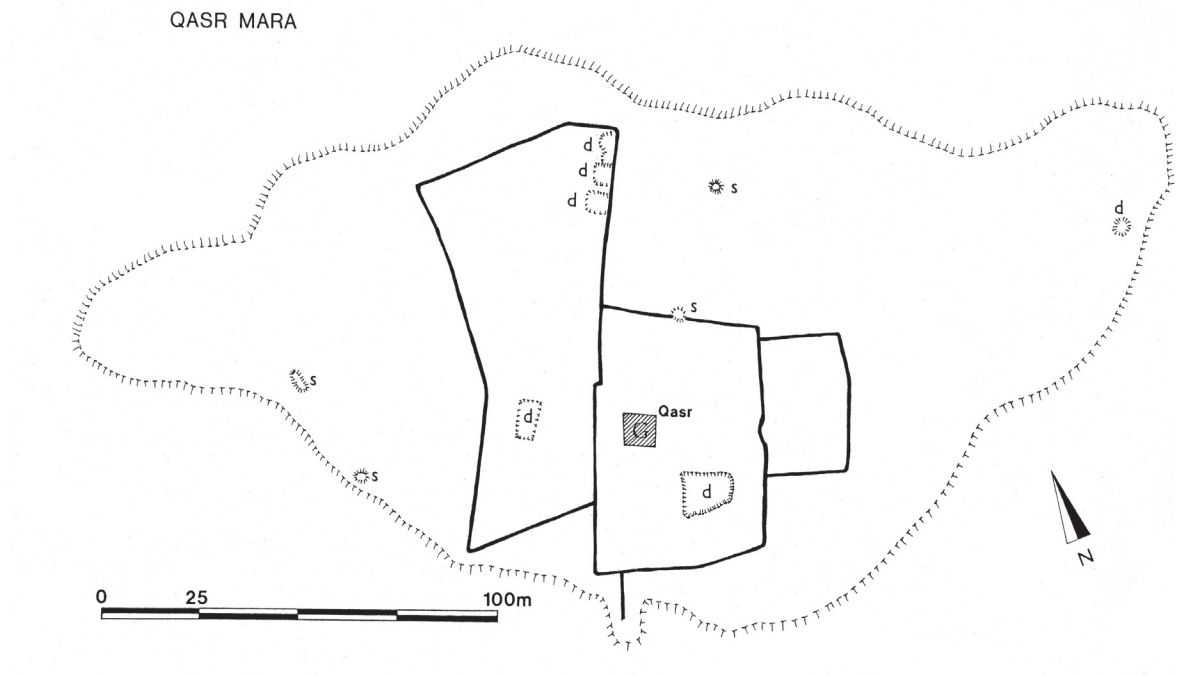


Figure 31.5. MAR 001, sketch plan of enclosures round qasr *(CMD 1968).*

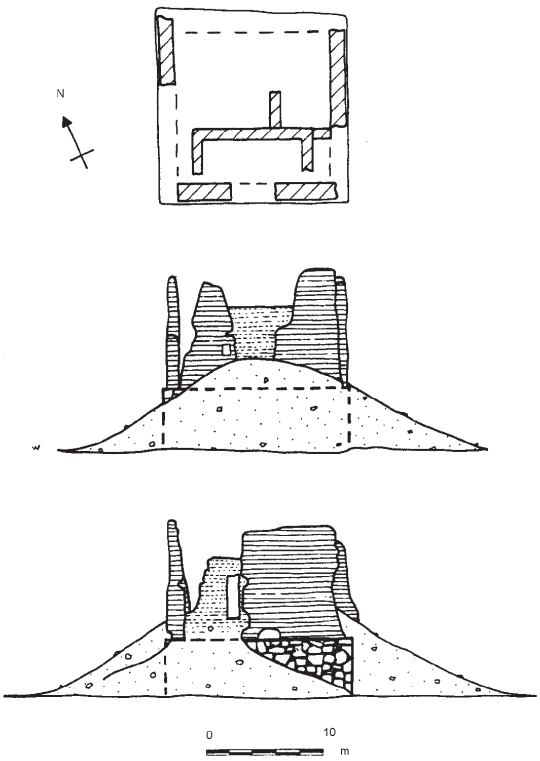


Figure 31.6. MAR 001, plan and elevation of qasr *(CMD 1968).*

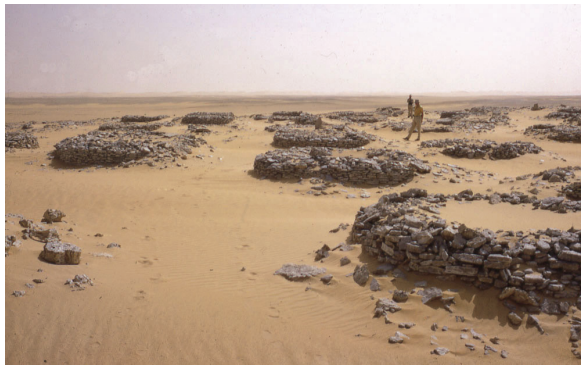


Figure 31.7. MAR 002, drum cairns (photo: CMD 1968).

Figure 31.8. MAR 002 cairns SE of qasr *(photo: CMD 1968).*

MAR 003 Cemetery
Small cluster of type 1a mound cairns on spurs SSE of MAR 001. Other stone-covered graves without significant superstructures also noted in this area. [1968]. ***GAR?***

MAR 004 Cemetery
Small group of 8-10 dispersed mound cairns and type 3a drum cairns on low hilltop. MAR 001 not visible from site. [1968]. ***GAR?***

MAR 005 Cemetery
Scatter of *c.*10 type 1a mound cairns on hilltop, with three at W end of spur. [1968]. ***GAR***

MAR 006 Cemetery?
Isolated cairns on hilltop E of MAR 001. Two sub-circular depressions also noted on hilltop close by. [1968]. ***LPAST? GAR?***

MAR 007 Cemetery
Small cluster of about seven cairns on N side of hilltop, some type 1c with regular kerbs similar to drum cairns. [1968]. ***GAR?***

MAR 008 Cemetery
Small cluster of 10-12 cairns along N side of hilltop towards its W end. [1968]. ***GAR?***

MAR 009 Lithics scatter, occupation?
Concentration of lithic material below W side of isolated hill. Further scatters extend to SE along base of hill towards MAR 002. Sherds also recovered from this area. Not further investigated. [1968]. **PAST**
***Ills: AF 2*, Fig. 31.9.**

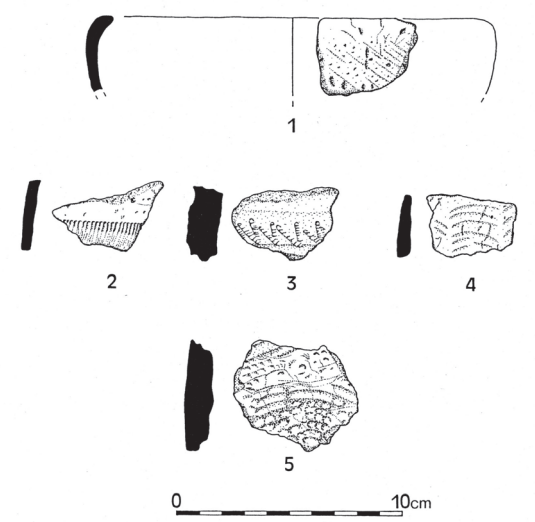


Figure 31.9. MAR 009, handmade pottery sherds (CMD/FP).

Figure 31.10. MAR 010, location of Pastoral site (photo: CMD 1968).

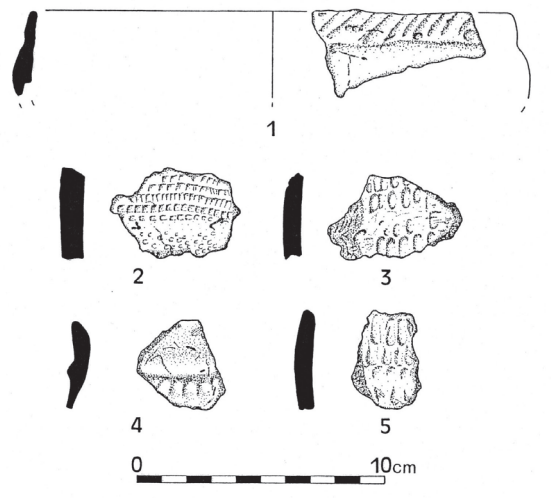


Figure 31.11. MAR 010, handmade pottery sherds (CMD/FP).

Figure 31.12. MAR 010 arrowhead/projectile point (CMD/FP).

Figure 31.13. MAR 011, foggara N of Māra (photo: CMD 1968).

Figure 31.14. MAR 012, cairns on ridge to NE of Mara, beyond foggara MAR 011 (photo: CMD 1968).

MAR 010 Lithics scatter, occupation

A large 'Neolithic' site was located on the S facing slopes of a low ridge *c.*7-8km W of Qaṣr Mara. Abundant Holocene lithics, including an earlier Aterian piece, pottery and a grindstone fragment noted. Sited on lower slopes overlooking salty area of palaeolake. About 20-40 low mounds of stone and sand may be graves. Position of site estimated on basis of 'dead-reckoning' from Qaṣr Mara. Possibly relocated in 2001 (26°02.711/13°18.416) at site with lithic and sherd scatters close to palaeolake basin with gypsum deposits. [1968, 2001]. PAL, PAST [CGAR]

***Ills: AF 2*, Figs 31.10-31.12.**

MAR 011 Foggara group

2-3 foggara channels to NE of Qaṣr Mara, with largest channel having large well at W end, largest infilled. Sherd scatters in area include probable Roman-period imported amphorae and other coarsewares. Palaeolithic handaxes also noted on foggara spoil heaps. [1968]. ***GAR***

***Ills: AF 2*, Fig. 31.13.**

MAR 012 Cemetery

Some further scatters of cairns were recorded 'NE of the foggara', but whose exact location was not recorded on Figure 31.1. These may have been cairns, visible on AP coverage, along the NE sides of a pass running into the Wādī Barjūj. [1968]. ***GAR?***

***Ills: AF 2*, Fig. 31.14.**

SECTION 32. QAṢR ASH-SHARRĀBA (SCH)

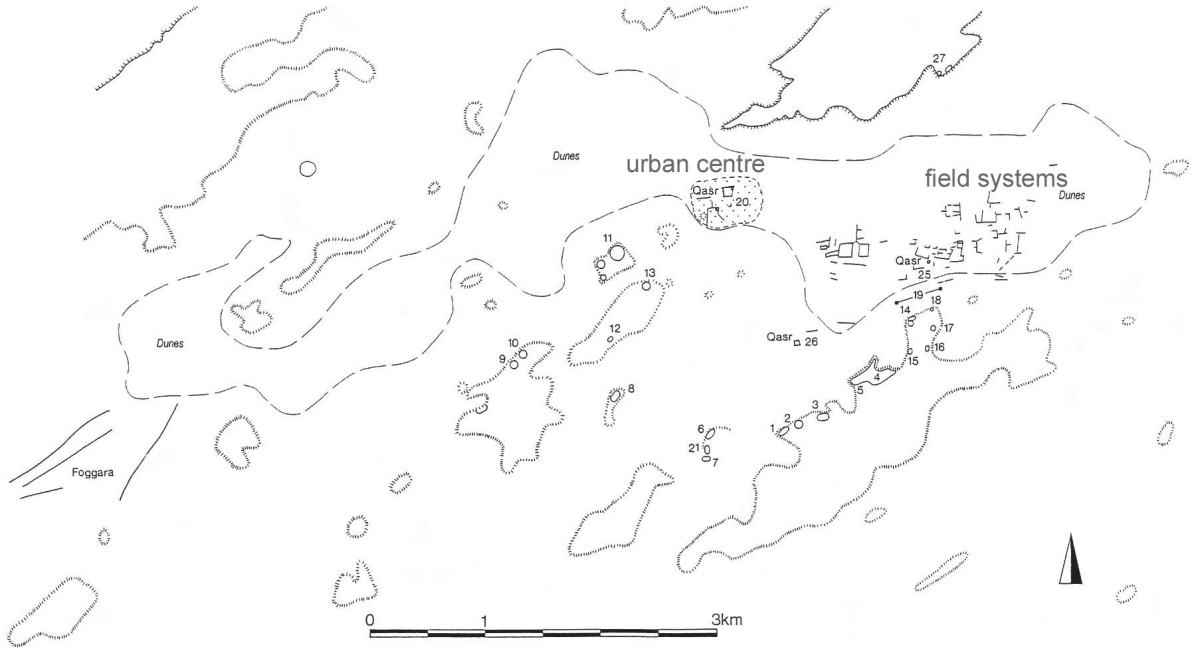


Figure 32.1. Map of sites in Qaṣr ash-Sharrāba sector, plotted from AP coverage (CMD/FP).

A reconnaissance of the Qaṣr ash-Sharrāba area was carried-out by CMD in April 1968. The preliminary visits confirmed the presence of a substantial settlement in the wadi but a full ground survey was impractical at that time. However, much of the surrounding area was traversed on foot and several of the major cemeteries identified. More detailed mapping of the area at 1:20,000 was also prepared from AP coverage, extending up to Qaṣr Māra and various other sites, not visited on the ground were also plotted on these.

The 1968 reconnaissance confirmed the presence of a substantial settlement that, despite reservations expressed by CMD, seems to be of Garamantian date. Associated cemeteries were also identified as well as evidence for more extensive occupation of the area, much of which may be of medieval date. Two Islamic features (a cemetery and possibly a desert mosque) were observed during 2000, but there is little evidence for significant occupation in the area in recent centuries. Lithics scatters and some unusual forms of graves indicate some late prehistoric occupation in the area.

The E end of the ash-Sharrāba wadi/depression includes very extensive spreads of ancient settlement and what are probably associated field systems covering 3-4km^2. Several substantial cemeteries have also been located close by, situated mainly on raised ground and low hills, to S and SW. The central '*qasr*' site (SCH 020) was relocated in 1999 and a preliminary survey of its core area made in 2000 (Mattingly *et al.* 2000b, 115; Edwards 2001, 51-53). Survey for lithics materials was carried out in the immediate vicinity. Areas were chosen that might reveal cultural material remains outside the main settlement and away from sand overburden, specifically around palaeolake sediments. No discrete lithics scatters were identified. Further structural remains, as indicated on the AP coverage, were identified S of SCH 020, appearing as white crusts and stone alignments on the ground surface.
***Ills: AF 1*, 150, 350; *AF 2*, Figs 32.1-32.2, 34.1.**

SCH 001 Cemetery

Large Type 5 cemetery of type 3a drum cairns and type 3b drum tombs, up to *c.*60cm high and 3-4m diameter with two larger examples noted of 6m and 8m diameter. Some parts of cemetery appear to be quite linearly aligned. No hands or offering tables found. Estimated *c.*100 tombs with 50-100 outliers, many heavily robbed for stone. Two graves had possible slab stele against side. Imported pottery including amphorae and RS noted. If stone

Figure 32.2. SCH 001, general view (photo: CMD 1968).

Figure 32.3. SCH 004, general view of cairns (photo: CMD 1968).

Figure 32.4. SCH 004, drum cairns (photo: CMD 1968).

Figure 32.5. SCH 007, cemetery (photo: CMD 1968).

Figure 32.6. SCH 020, general view over town site of Qaṣr ash-Sharrāba, looking N towards qsur *and fort (photo: FP 1999).*

robbing relates to quarrying for building materials for the settlement, this suggests graves may predate settlement, or part of it. [1968]. **CGAR**
***Ills: AF 2*, Fig. 32.2.**

SCH 002 Cemetery
About 50 sub-circular stone ringed features, probably type 2b shaft burials, plus at least one type 3a drum cairn. Surface sherds include buff amphorae. [1968]. CGAR?

SCH 003 Cemetery
Large Type 3 cemetery to NE of SCH 002, estimated at 200+ burials, many apparently type 2b shaft graves. Part of site consists of tightly packed shaft graves, with more widely dispersed low mounds cairns and type 3a drum cairns in some areas. Most of W side heavily robbed and little of superstructures survives although a few possible drum cairns and three large mound cairns noted. Surface sherds include amphorae and jugs/flagons. Two pairs of small rectangular cist-like structures noted, probably eroding out of loose surface deposits. Small quantities of chert also noted in vicinity. [1968]. CGAR

SCH 004 Cemetery
Large Type 3 cemetery of *c.*400 burials, including probable shaft graves *c.*500m NE of SCH 003. Most partly masked by blown sand and some robbing of stone, but some possible type 5a stepped tombs *c.*3m diameter noted, with type 3a drum cairns. Surface pottery includes RS, apparently concentrated around 'beehive' graves. [1968]. CGAR
***Ills: AF 2*, Figs 32.3-32.4.**

SCH 005 Cemetery
To West of SCH 004, a small group of 20-30 type 1a mound cairns, robbed. No drum cairns noted, but BR and abundant RS. [1968]. CGAR

SCH 006 Cemetery
Small cemetery of *c.*50 graves, surviving mainly as low rubble mounds, with a few beehive cairns. Occasional scattered cairns extend to S. [1968]. ***CGAR?***

SCH 007 Cemetery
Small cemetery of *c.*20 beehive cairns. One rotary quern upper recovered in area. No pottery. [1968]. **CGAR?**
***Ills: AF 2*, Fig. 32.5.**

SCH 008 Cemetery
35-40 well-robbed graves; beehive cairns and crude drum cairns. No pottery. [1968]. ***CGAR***

SCH 009 Cemetery
Small cemetery of *c.*30 beehive cairns, robbed. Little pottery. Further graves noted to S, but not surveyed. ***CGAR***

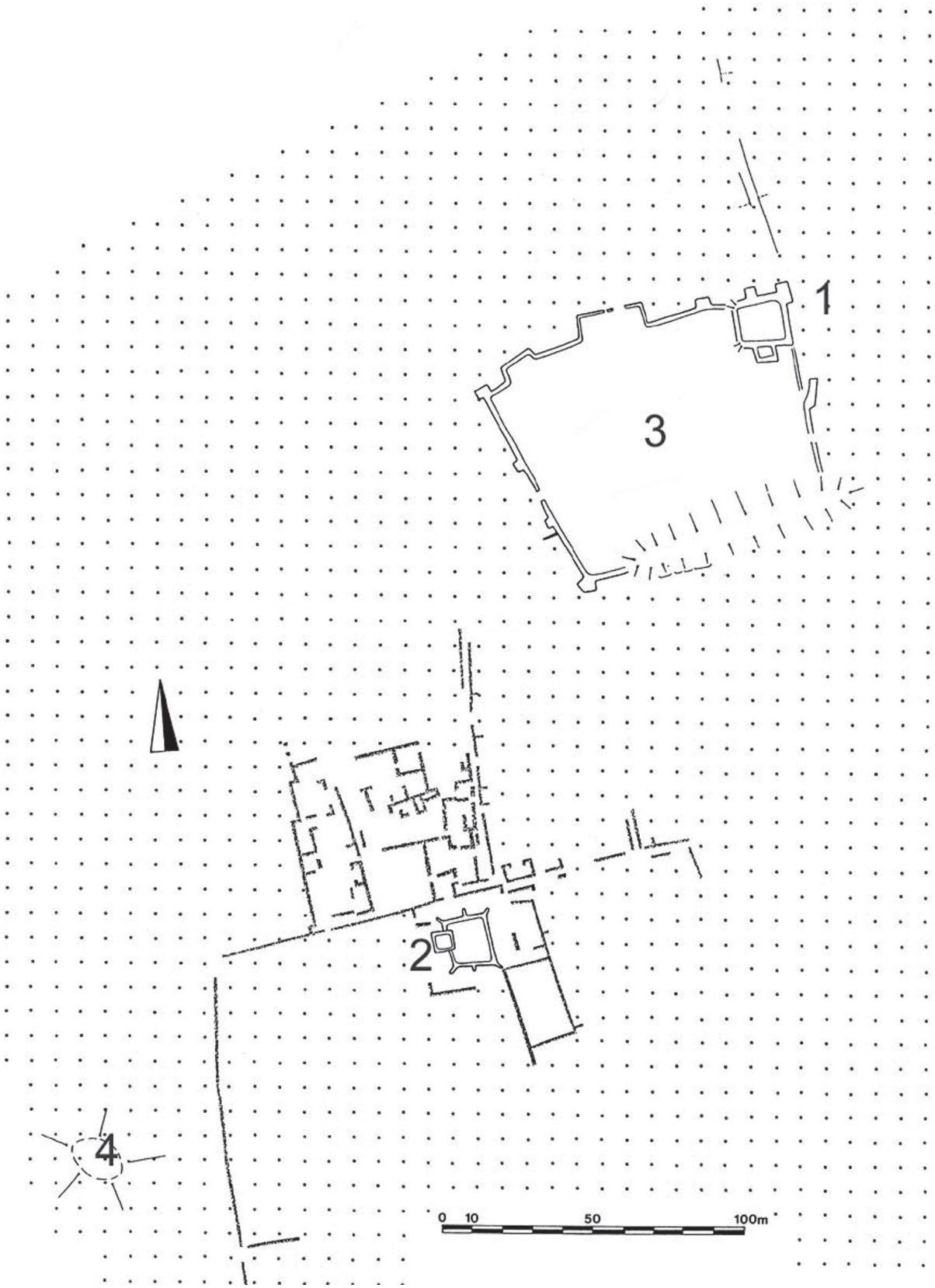


Figure 32.7. SCH 020, plan of central sector of town around qsur *(1) and (2) and fort (3) (FP 2000).*

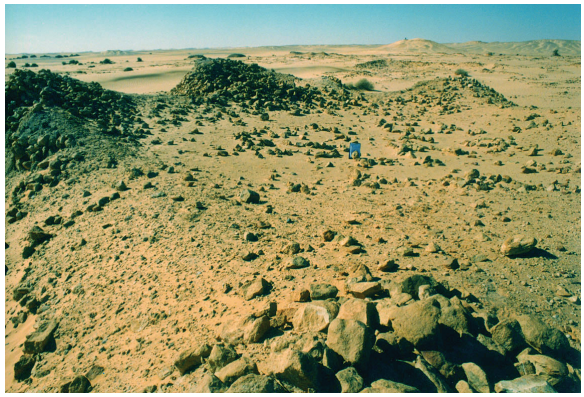


Figure 32.8. SCH 020, general view of qasr *1 (photo: FP 2000).*

Figure 32.10. SCH 020, view from hillock at SW edge of site (no. 4 on Fig. 32.7), looking NE towards qasr *2 and in distance* qasr *1 and fort 3 (photo: FP 2000).*

Figure 32.9. SCH 020, road running N from qasr *1 (photo: FP 2000).*

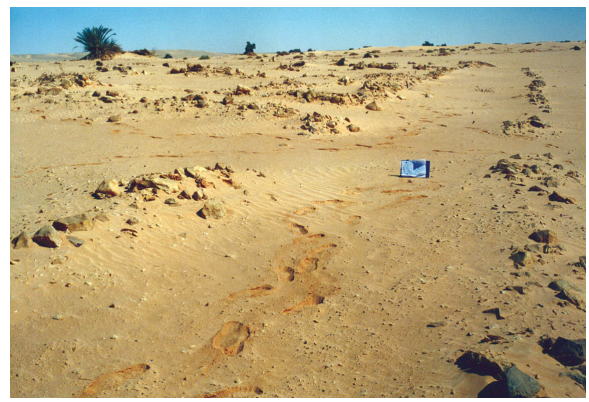


Figure 32.11. SCH 020, junction of two perpendicular streets and building compounds (photo: FP 2000).

SCH 010 Cemetery
Group of 50 beehive cairns close to SCH 009. Heavily robbed. [1968]. ***CGAR***

SCH 011 Cemetery
Cemetery with probably three main groups of cairn graves, estimated *c.*100-150 total. Identified on AP coverage only. ***LPAST? GAR?***

SCH 012 Cemetery
Small cemetery of *c.*20 robbed beehive cairns. [1968]. ***CGAR***

SCH 013 Cemetery
Small group of 10-12 graves, marked by low cairns. Unusual forms suggested that possibly prehistoric. [1968]. ***LPAST? GAR?***

SCH 014 Cemetery
Small cemetery of *c.*30-40 beehive cairns. [1968]. ***CGAR***

SCH 015 Cemetery
Small cemetery of *c.*25 graves marked by low mounds. Unusual form suggested that possibly prehistoric date. No finds. [1968]. ***LPAST? GAR?***

SCH 016 Cemetery
Small cemetery of *c.*35 possibly prehistoric graves marked by very slight low mounds. No finds. [1968]. ***LPAST? GAR?***

SCH 017 Cemetery
Small cemetery of *c.*60 small stone mounds. No finds. Date uncertain. [1968]. ***LPAST? GAR?***

SCH 018 Cemetery
Large isolated cemetery at NE edge of hill. Fragment of (upper) rotary quern recovered. [1968]. **CGAR?**

SCH 019 Occupation
Possible area of Neolithic occupation along edge of hills. Requires confirmation. [1968]. **PAST**

Figure 32.12. SCH 020, rectangular building complex (photo: FP 2000).

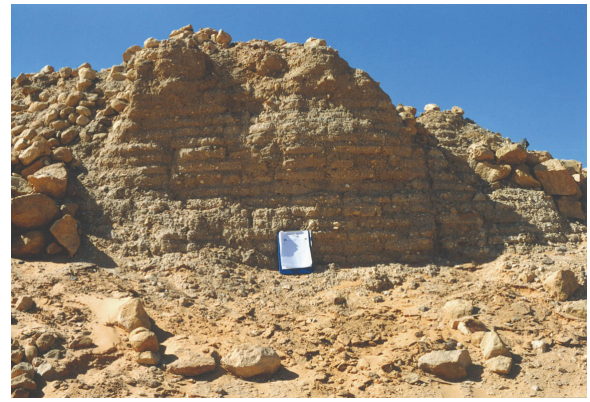


Figure 32.14. SCH 020, section of mudbrick walling of qasr *1 (photo: FP 2000).*

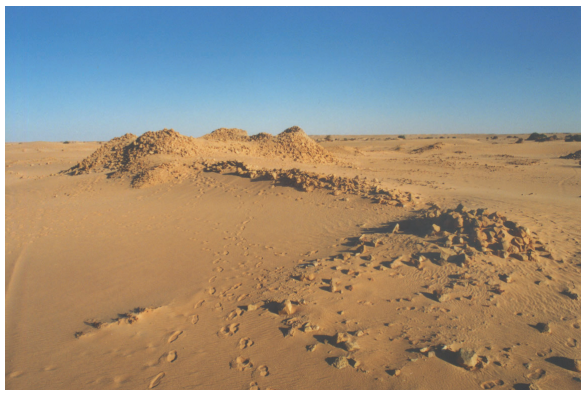


Figure 32.13. SCH 020, qasr *1 with fort 3 to right, looking SE (photo: FP 2000).*

Figure 32.15. SCH 020, section of stone walling of qasr *1 (photo: FP 2000).*

SCH 020 Urban settlement, *qsur*, enclosures **25°58.71/13°17.25**

On the W side of a large area of probable field systems Qaṣr ash-Sharrāba consists of a major settlement with a large fortress and two smaller tower-like *qasr* structures at its core. *Qasr* A (**1**) sits within one corner of the fortress (**3** which may be earlier in date), with *qasr* B (**2**) *c.*250m to the SW. The overall area of the settlement is a minimum of *c.*15ha of rectilinear buildings and enclosures, with only a small sector planned in detail in 2000 (Fig. 32.7). The size of the site, the apparently regularity of layout (with a rough grid of streets and alleys) and the scale and complexity of the buildings visible at the surface justify the use of the term 'town' to describe this remarkable settlement. However, there is no evidence of an external enceinte.

Three AMS dates from the fabric of *qasr* A (OxA-9631, OxA-9942, OxA-9826, 1721±39, 1431±33, 918±32BP) indicate activity at various points between the 3rd-5th, 6th-7th and 11th-13th centuries AD. This area is part of a much more extensive area of settlement, visible on AP coverage, which extends over *c.*3km E-W and *c.*1km N-S and covers about 40 ha. This includes at least two further *qasr* sites to the E and SE (see SCH 025-026).

Structural remains to the E of SCH 020 seem likely to represent field systems, probably with small sāniats. Most of the structures appear to be constructed of rough undressed stonework, often with mud mortar. CMD thought it likely that the remains related to a relatively limited period of occupation, favouring an Islamic date (1989, 58). The more detailed FP work, coupled with the AMS dates shows that the site originated as a major Garamantian settlement and continued into the early Islamic era. It has been argued that the site may correspond with the site referred to in Islamic sources as Tsāwa, though in modern times that toponym has migrated some 30km to the NE – perhaps following the retreat of agriculture in that direction (*AF 1*, 149; Mattingly *et al.* 2002, 18) [1968, 1999, 2000]. **CGAR, LGAR, POSTGAR, EISLAM**

***Ills: AF 1*, 150, 169; *AF 2*, Fig. 32.1, 32.6-32.15.**

SCH 021 Occupation

Spread of Neolithic material in area of SCH 006 and in band running S towards SCH 007. [1968]. **PAST**

SCH 022 Cemetery **25°57.62/13°17.52**

South end of line of Islamic cemetery aligned north-south. [2000]. ***EISLAM? ISLAM?***

SCH 023 Settlement 25°57.69/13°17.78
Denuded regular grid of wall lines marked by white surface crust and stones. One potsherd. The area was *c.*50 x 50m. [2000]. **CGAR**

SCH 024 Cairn 25°57.49/13°17.29
Small cairn tomb constructed of 'silcrete' slabs still standing to 4-5 courses high at the western end of mound. The cairn tomb was sub-rectangular in shape and badly disturbed. Two potsherds collected from the northern slope of the mound were possibly associated with the tomb. There were also a few possibly Late Pastoral lithics [2000]. ***GAR?***

SCH 025 *Qasr*
Small *qasr* structure towards E side of settlement complex, *c.*1.5km ESE of SCH 020. Extensive field/wall lines to N of site. Located on AP coverage only. ***GAR-ISLAM?***

SCH 026 *Qasr*
Small *qasr* structure with near square enclosure wall around it, towards S side of Qaṣr ash-Sharrāba settlement complex, *c.*1km SE of SCH 020. Located on AP coverage only. ***GAR-ISLAM?***

SCH 027 Cemetery
Small cemetery of 10-20 cairns on low hills to N of settlement area. Identified on AP coverage only. ***LPAST? GAR?***

SCH 028 Foggara group
Group of 3-4 foggara channels running into W end of ash-Sharrāba wadi. Located on AP coverage only. ***GAR***

SCH 029 Lithics scatter
Lithics scatter along edge of a palaeolake basin a few km W of ash-Sharrāba wadi. Seen on reconnaissance survey only and not revisited (or firmly located on Fig. 32.1). **PAL, PAST, LPAST**
Ills: AF 2, Fig. 42.5.

SECTION 33. GHUDDWA [GODDUA] (GDD)

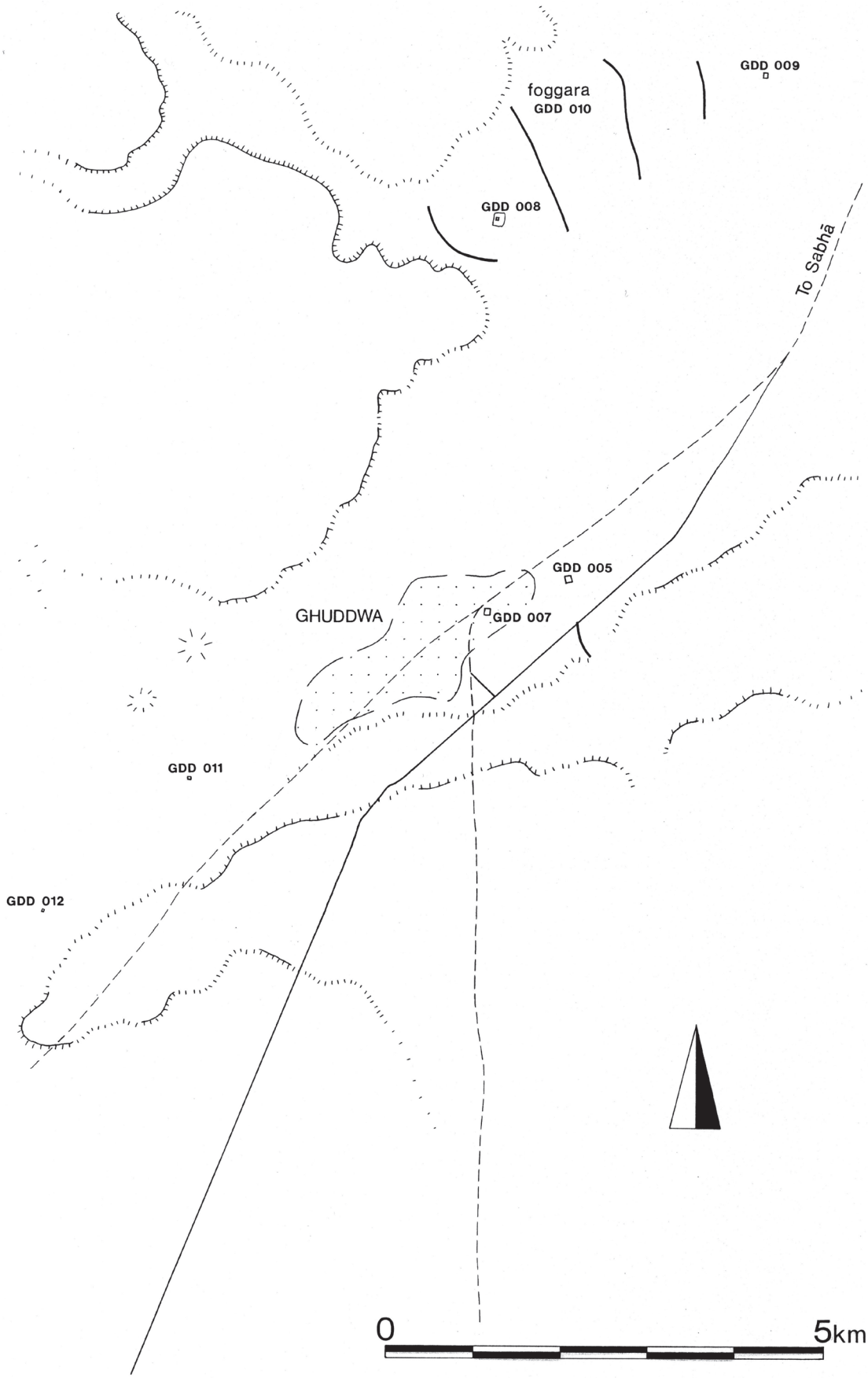


Figure 33.1. Map of sites in Ghuddwa sector, plotted from AP coverage (CMD/FP).

Ghuddwa ('Goddua') is a substantial village (Scarin 1937b, 632 – 352 inhabitants, 8,000 date palms) dispersed through an oasis within the otherwise relatively barren NE part of the Wādī an-Nashw'a, *c.*80km S of Sabhā and *c.*75km from Murzuq. The village was visited by CMD during April 1968. Only a brief reconnaissance of the village and its environs was possible but a cluster of sites were identified, scattered through the cultivated areas, with two cemeteries being found along the line of the new tarmac Sabhā-Murzuq road, which seems to have replaced older tracks which ran further east. The present condition of these sites is unknown. Ghuddwa was not revisited by FP, but the earlier archive has been worked up into definitive form (Edwards 2001, 53-56)

CMD photos of the village area also recorded the large cemetery area, probably long established. The placing of large jars and other pottery, as well as grindstones at the end of graves (*AF 1*, 232) was clearly still very common practice in the late 1960s.
***Ills: AF 2*, Figs 33.1-33.4.**

Figure 33.2. Ghuddwa, mosque and cemetery (photo: CMD 1968).

Figure 33.3. Ghuddwa Islamic cemetery near GDD 007 (photo: CMD 1968).

GDD 001 Cemetery
Ground clearance within fields had deposited substantial quantities of stones around field edges, probably derived from tomb superstructures. Other mounds of earth and stone probably marked surviving graves. Two type 4a offering tables and part of a type 5b stele indicate the presence of Garamantian period burials although no pottery was found. [1968]. **CGAR**
***Ills: AF 2*, Fig 31.4.**

GDD 002 Cemetery
Probable Type 7 or 8 cemetery site cut through by the old Sabhā-Murzuq road, *c.*1.5km NE of GDD 001. This formed a substantial mound *c.*100 x 55m, with two graves part-exposed by diggings on the N side and robbed subcircular graves to S of road.

Tomb 1 had a type 5b hand stele and type 4a offering table on the W side. The hand was painted red on the top and top and face but apparently not on sides. Apparently constructed with a central double element (i.e. a 'horn') with two separate side elements. The offering table was recessed into the base of the hand. Possible thin mud plaster applied over the red paint, but possibly natural accumulation. Traces of mudbrick to E of hand and part of mudbrick wall to S. **Tomb 2** with stele/offering table to E. Mudbrick walling to W of stele relates to a rectangular superstructure of type 4b tomb. Type 5b stele had double central element and two separate side elements, with red painted face and top. The type 4a offering table recessed a little way into the hand.

To the north of these two tombs further mudbrick structures apparent. Superstructures thought likely to be type 4b square unstepped structures similar to those at Sāniat bin Huwaydī near Jarma. [1968]. **CGAR**
***Ills: AF 2*, Figs 33.4-33.7.**

GDD 003 Cemetery
Cemetery to SE of GDD 002. Graves marked by low stony mounds, much disturbed. No surface pottery found. [1968]. ***LPAST? GAR?***

GDD 004 Cemetery
Mound between sites GDD 002 and GDD 005, a little to W of direct line between them. Estimated 10+ burials, probably unrobbed. Sherds of imported Roman pottery, including flagons. [1968]. **CGAR**

GDD 005 *Qasr*
Large *qasr* site with walls surviving 6-7m high in places. Near square plan with corner towers and interval towers in centre of walls. Depression in central area may represent an internal feature, such as a tower, now gone. Sherds of local handmade wares, RS, amphorae and imported coarsewares in area but date of site uncertain. **CGAR**
***Ills: AF 1*, 148; *AF 2*, Figs 33.4, 33.8.**

GDD 006 *Qasr*?
A short distance to west of GDD 005 is a 'rather modern' tower-like structure, partially collapsed. Date uncertain. [1968]. ***GAR-EMOD?***

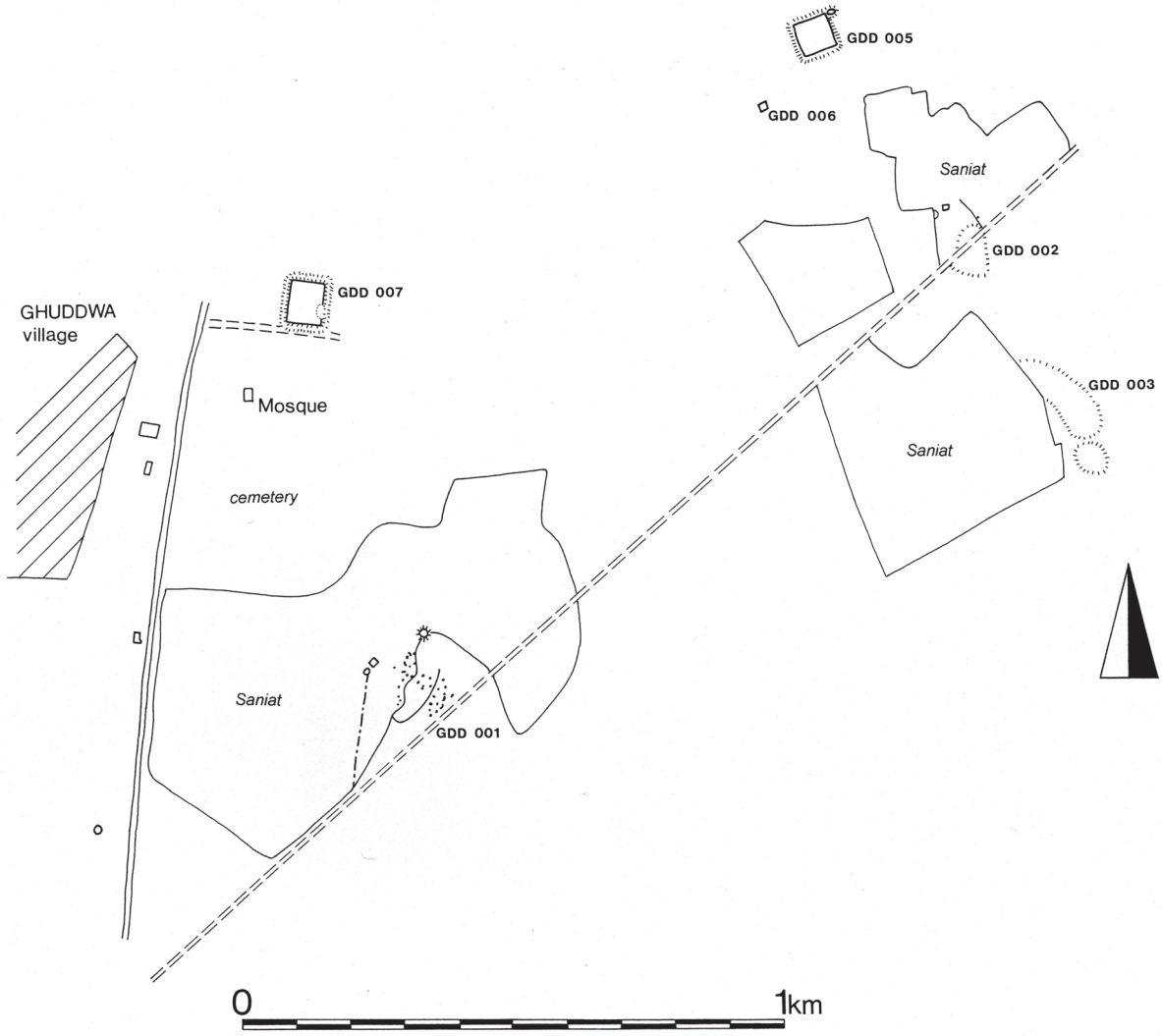


Figure 33.4. Detailed map of sites around the Ghuddwa oasis village (CMD/FP).

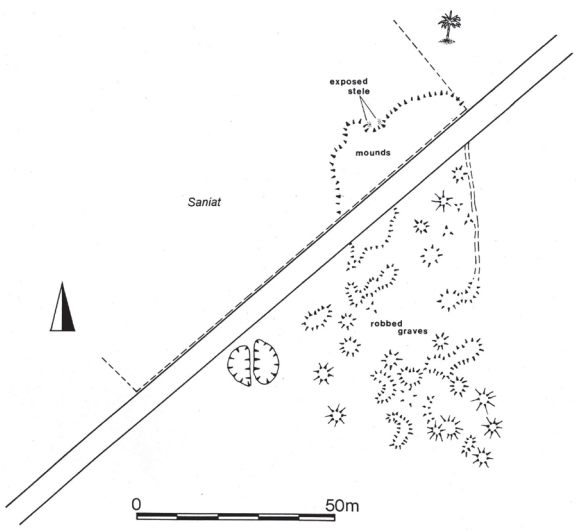


Figure 33.5. Area of cemetery GDD 002 (CMD 1968).

Figure 33.6. GDD 002.1 and 002.2, excavated tombs with typical Garamantian stele and offering tables (photo: CMD 1968).

Figure 33.7. GDD 002.2, mudbrick tomb with type 5b stele and type 4 offering table (photo: CMD 1968).

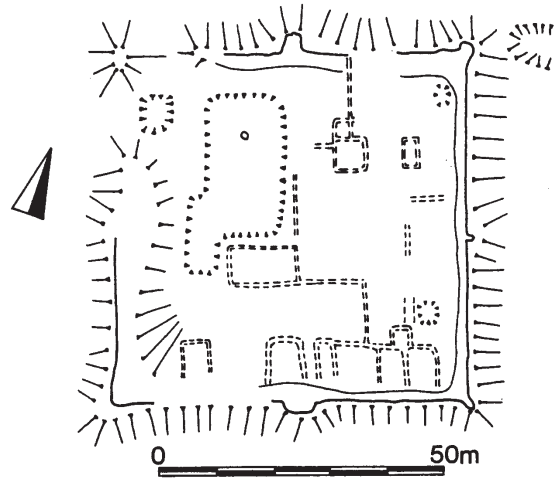


Figure 33.8. GDD 005, plan of large qasr *(CMD 1968).*

GDD 007 *Qasr*
Large rectangular mudbrick structure with corner towers, with some upstanding walls. Provisionally dated to medieval or more recent period but fragment of imported RS ware found in area. [1968]. **CGAR, *GAR-EMOD?***

GDD 008 *Qasr*
Small square *qasr* with corner towers, with extensive outer enclosures around it. Located on slightly raised ground in wadi bed N of oasis. Identified on AP coverage only and no ground survey. ***GAR-EMOD?***

GDD 009 *Qasr*? Enclosures
Probable *qasr* site NE of GDD 008. Probably no upstanding walls. Possible enclosures/field systems around site. Identified on AP coverage only and no ground survey. ***GAR-EMOD?***

GDD 010 Foggara group
At least four foggara channels running into N end of oasis. Path of lower channels lost in area of low dunes and scrub. Identified on AP coverage only and no ground survey. ***GAR***

GDD 011 Funerary monument?, enclosure
Small structure inside enclosure to SW of village, possibly a tomb. Located on raised open ground above area of sand and scrub in wadi floor. Identified on AP coverage only. ***GAR-EMOD?***

GDD 012 *Qasr*?
Probable small square *qasr* or enclosure with corner towers on raised open ground to SW of village. Identified on AP coverage only. ***GAR-EMOD?***

SECTION 34. WĀDĪ AN-NASHW'A [EN-NESCHIU] (NSH)

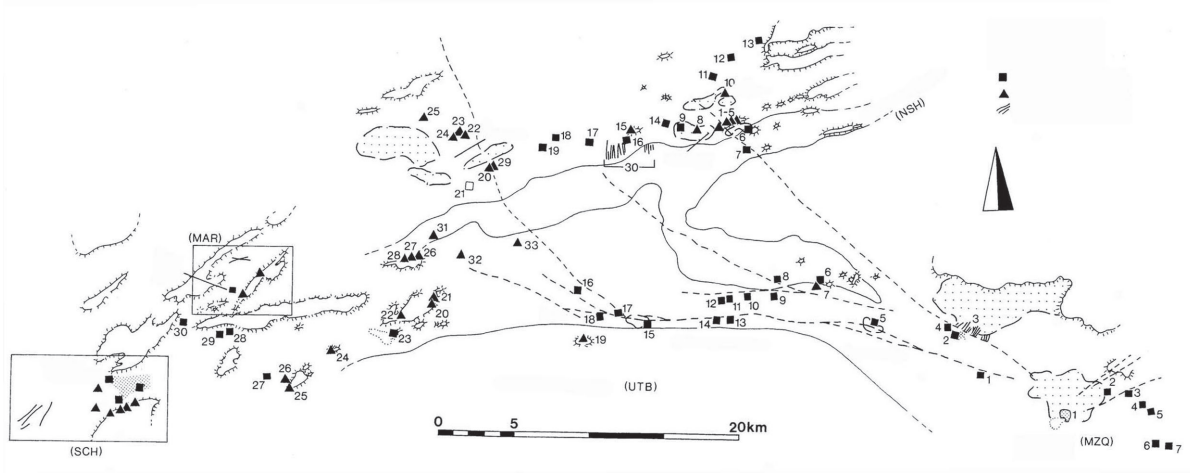


Figure 34.1. Overall map of Wādī an-Nashw'a (Section 34) and Wādī 'Utba (Section 35) areas and neighbouring survey areas (covering Sections 31-32, 36) (CMD/FP).

This area represents the W end of the Wādī an-Nashw'a to the SW of Ghuddwa and NW of Murzuq. It was briefly traversed by CMD in 1968 during his S expedition to visit the Qaṣr Mara and Qaṣr ash-Sharrāba areas. Ground survey was only attempted in the Dūjāl area. There, a cluster of cemetery sites on a low hill where the Murzuq-Dūjāl road crosses the Wādī an-Nashw'a (*c.*30km NW of Murzuq) were surveyed.

While the ground survey in this area is very limited, the available AP coverage for the area was examined by CMD and several further sites were identified (Edwards 2001, 54-56). The APs were re-examined in 2000 and identifiable sites plotted. A few of these sites were located during 2001 but the others require relocation and confirmation on the ground.
***Ills: AF 1*, 350; *AF 2*, Fig. 34.1.**

NSH 001 Cemetery?
A small cluster of *c.*6 cairns on the hilltop W of the roadline. [1968]. ***LPAST? GAR?***

NSH 002 Cemetery
Large nucleated cemetery of estimated 300+ graves on S side of hilltop to E of roadline. By 1968, superstructures largely demolished by stone quarrying for roadworks. No record of sherds, but some Roman glass here. [1968]. **CGAR**

NSH 003 Cemetery
Large nucleated cairn cemetery of estimated 100 graves to E of NSH 002, also heavily robbed. Surface sherds include significant quantities of RS and occasional BR or other local wares. [1968]. **CGAR**

NSH 004 Cemetery
Small cluster of graves, robbed out. [1968]. ***GAR?***

NSH 005 Cemetery
Dispersed cemetery of 10-15 large drum cairns scattered on S and E edge of hilltop, some 6-7m diameter. In 1968, several tombs recorded as unrobbed. [1968]. ***GAR?***

NSH 006 *Qasr*, enclosure
Square *qasr* with corner towers and towers/gates in centre of four walls; possibly with enclosure wall outside. Located on APs only. ***GAR-EMOD?***

NSH 007 *Qasr*
Located on APs only. ***GAR-EMOD?***

NSH 008 Cemetery
Large nucleated cemetery on E part of low ridge to N of village. Located on APs only. ***GAR?***

NSH 009 *Qasr*
Square *qasr* with corner towers and possible interval towers/gates, within cultivated areas of extended village. Located on APs only. ***GAR-EMOD?***

NSH 010 Cemetery
Nucleated cairn cemetery at W end of low ridge. Located on APs only. ***GAR?***

NSH 011 *Qasr*, enclosure
Small square tower *qasr* with traces of larger subrectangular enclosure around it. Located on APs only. ***GAR-EMOD?***

NSH 012 *Qasr*, enclosure
Small square tower *qasr* with possible elements of larger subrectangular enclosure to N. Located on APs only. ***GAR-EMOD?***

NSH 013 *Qasr*, enclosure
Small *qasr* structure with four corner towers and gateway on N side. Possible further enclosure on NE side. Located on APs only. ***GAR-EMOD?***

NSH 014 Enclosure
Square enclosure, possibly a *qasr*. Possible small corner towers. Located on APs only. ***GAR-EMOD?***

NSH 015 Cemetery
Probable large cemetery on low hill. Large areas of disturbed ground surface apparent although apparently lacking substantial superstructures. Located on APs only. ***GAR?***

NSH 016 *Qasr*
Small square *qasr*, probably with corner towers and possible interval towers. Plan indistinct. Located on APs only. ***GAR-EMOD?***

NSH 017 *Qasr*
Small square *qasr* with possible corner towers, with dunes very close to N and W. Located on APs only. ***GAR-EMOD?***

NSH 018 *Qasr*, enclosures
Small square *qasr* with traces of further enclosures around it. Located on APs only. ***GAR-EMOD?***

NSH 019 *Qasr*
Small *qasr*, with N-S dunes encroaching on E side. Located on APs only. ***GAR-EMOD?***

NSH 020 Cemetery
Cemetery of scattered cairns on low hill to SE of village/oasis. Located on APs only. ***LPAST? GAR?***

NSH 021 Enclosed settlement?
Poorly-defined large oval enclosure with possible structural remains within. Located on APs only. ***GAR-EMOD?***

NSH 022 Cemetery
Cemetery NE of NSH 024, with *c.*10 large cairns and probably many more robbed, unmarked graves. Located on APs only. ***LPAST? GAR?***

NSH 023 Cemetery
Small cemetery to N of NSH 024, apparent as heavily disturbed ground. No superstructures visible. Located on APs only. ***LPAST? GAR?***

NSH 024 Cemetery
Large nucleated cemetery of estimated *c.*150-200 graves, many with circular cairns. Located on APs only. ***GAR?***

NSH 025 Cemetery
Large cemetery running SW-NE along low ridge. Large subcircular cairns visible in several groups. Further scattered cairns on hills to W. Located on APs only. ***GAR?***

NSH 026 Cemetery 26°02.22/13°29.73
Cemetery of *c.*50 cairns on low hilltop, including type 3a drum cairns associated with wheelmade pottery. Garamantian cemetery found on mesas located approximately 509m above sea level. Located on APs, identified on ground 2001. [2001]. **CGAR**

NSH 027 Cemetery 26°02.23/13°29.52
Cemetery of *c.*30-40 cairns on low hilltop including type 3a drum cairns associated with wheelmade pottery. Garamantian cemetery. Located on APs, identified on ground 2001. [2001]. **CGAR**

NSH 028 Cemetery 26°02.22/13°29.29
Small cemetery of cairns and drum cairns associated with wheelmade pottery. Garamantian cemetery. Located on APs, identified on ground 2001. [2001]. **CGAR**

NSH 029 Cemetery
Cemetery on low hill to SE of village, just to E of NSH 020. Visible as heavily disturbed ground with no substantial superstructures apparent. Located on APs only. ***LPAST? GAR?***

NSH 030 Foggara group
Large group of *c.*20 linear features which appear to be foggara channels, oriented near N-S. Further cluster of 4-5 possible channels a few km to E. Located on APs only. ***GAR***

NSH 031 Cemetery 26°02.54/13°29.99
Cairns and type 3a drum cairns associated with wheelmade pottery. Garamantian cemetery found on mesas located *c.*509m above sea level. [2001]. **CGAR**

NSH 032 Cemetery 26°02.33/13°31.43
Elongated graves (low mounds with various orientations), date uncertain. Found on mesas located *c.*509m above sea level. [2001]. ***GAR?***

NSH 033 Cemetery 26°02.65/13°33.20
Circular cairns and elongated graves (low mounds with various orientations), date uncertain. Also some small mounds *c.*15cm diam. Found on mesas located *c.*509m above sea level. [2001]. ***GAR?***

SECTION 35. WĀDĪ 'UTBA [WADI UTBA] (UTB)

The Wādī 'Utba runs W of Murzuq, and forms a broad shallow depression, bounded by the Dahān Murzuq (sand sea) on its S side. Its N side is poorly defined, but its edge seems to broadly correspond with the distribution of modern settlements. In the late 1950s, these appear to have been quite widely dispersed formed around scattered wells and field enclosures. These include Umm al-Ḥammām, Āqār and Tsāwa (Scarin 1937b, 630-32 provides some details of villages). The block of sites listed here include all those identified W of Murzuq outside the Wādī an-Nashw'a proper. Qaṣr ash-Sharrāba lies *c.*60km W of Murzuq.

The main features of this area are the series of *qsur*, mainly located close to the main tracks running W of Murzuq. Most are probably medieval or more recent. Lyon recorded the presence of an old 'Arab' castle at Tsāwa when he visited in 1819 (1821, 189). As far as can be determined, in the 1950s most were still upstanding although a few sites appear to be more heavily eroded, and potentially more ancient. The CMD archive provides little information about the modern settlements in the wadi. In the 1950s and 1960s, many of the villages seem to have been quite dispersed, set around wells and included many *zarība* buildings (built of wood and palm leaves) as well as mud-built structures. Some structures, such as the mosque in Āqār may date back to the 19th century. Most of the sites in this section were identified by Edwards from the air-photographic coverage in the CMD archive (Edwards 2001, 57).

The general character of two of the cemeteries UTB 019, 024) suggests that they may well be of broadly Garamantian date but no date can be suggested for the others. At the W end of the wadi towards Qaṣr ash-Sharrāba, several groups of irregular enclosures were also noted on the AP coverage (e.g. near UTB 026/029). Built on the lower slopes of hills, these may be livestock enclosures.

***Ills: AF 1*, 350; *AF 2*, Fig. 34.1, 35.1-35.3.**

Figure 35. 1. Traditional dalu *well, Wādī 'Utba (photo: CMD 1968).*

Figure 35.2. Palm frond (zarība) *house in Wādī 'Utba (photo: CMD 1968).*

Figure 35.3. Mosque at Āqār in Wādī 'Utba (photo: CMD 1968).

UTB 001 *Qasr*, enclosures
Square *qasr* with corner towers and gates/towers in the centre of the walls. The core structure is surrounded by further walls with two substantial enclosures on its W side. Located on APs only. ***GAR-EMOD?***

UTB 002 *Qasr*
Large square *qasr* with corner towers and centrally placed gates/interval towers. No associated structures visible. Located on APs only. ***GAR-EMOD?***

UTB 003 Foggara group
An extensive spread of linear features, almost certainly foggara, running into *sabkha* area from SW, spread over 2-3km. Upstanding banks visible at E end, but traces of lines of well pits can be traced over *c.*1-1.5km to W. Located on APs only. ***GAR***

UTB 004 *Qasr*
Small *qasr* probably with no upstanding walls, in area of scrubland at W end of *sabkha*. Located on APs only. ***GAR-EMOD?***

UTB 005 *Qasr*?
Probable site of small *qasr* on N side of small oasis,, probably with no upstanding features. Located on APs only and requires confirmation. ***GAR-EMOD?***

UTB 006 *Qasr*, enclosure
Probable site of small tower *qasr*, possibly with enclosure wall around it. Located on APs only and requires confirmation. ***GAR-EMOD?***

UTB 007 Cemetery?
Possible small cemetery on small low hill to S of UTB 006. Any superstructures probably small. Located on APs only and requires confirmation. ***LPAST? GAR?***

UTB 008 *Qasr*, enclosure
Large square *qasr* on N side of old track, possibly with small corner towers and large rectilinear enclosures on W, N and E side. Located on APs only. ***GAR-EMOD?***

UTB 009 *Qasr*
Small square *qasr* with corner towers and probably gate on N side, lying on S side of main E-W track. Located on APs only. ***GAR-EMOD?***

UTB 010 *Qasr*, enclosure
Small square *qasr c.*2km W of UTB 009 on S side of track. Probably with corner towers and a square outer enclosure wall. ***GAR-EMOD?***

UTB 011 *Qasr*, enclosure
Small *qasr* on E side of oasis, within large square enclosure, probably with corner and interval towers. Similar in plan to UTB 013-14. Located on APs only. ***GAR-EMOD?***

UTB 012 *Qasr* ?, enclosure
Possible *qasr* site with outer enclosure just *c.*250m W of UTB 011. Probably little upstanding building survives. Located on APs only. ***GAR-EMOD?***

UTB 013 *Qasr*, enclosure
Small *qasr* within large square outer enclosure, just to S of main E-W track. Similar in plan to UTB 011 and UTB 014. Located on APs only. ***GAR-EMOD?***

UTB 014 *Qasr*, enclosure
Small *qasr* within W part of large square outer enclosure, just to S of main E-W track, *c.*1km W of UTB 013. Similar in plan to UTB 011 and UTB 013. Located on APs only. ***GAR-EMOD?***

UTB 015 Enclosed settlement
Large nucleated enclosed settlement on SE side of oasis village (Tsāwa?). Abandoned by 1950s. Located on APs only. ***GAR-EMOD?***

UTB 016 *Qasr*
Small square *qasr* with corner towers; apparently well-preserved. Located on APs only. ***GAR-EMOD?***

UTB 017 *Qasr*
Small square *qasr* with corner towers and gate in S wall. Located on APs only. ***GAR-EMOD?***

UTB 018 *Qasr*, enclosure
Small square *qasr*, probably with corner towers and gate in S wall. Traces of a rectangular outer enclosure. Several abandoned wells on W side. Located on APs only. ***GAR-EMOD?***

UTB 019 Cemetery
Small cemetery of *c.*30-40 graves on E end of small low hill in wadi. Superstructures appear to be circular cairns. Located on APs only. ***LPAST? GAR?***

UTB 020 Cemetery
Small cemetery of *c.*20-30 cairns on low S-facing ridge. Located on APs only. ***LPAST? GAR?***

UTB 021 Cemetery
Scatter of *c.*10 cairns on E end of low ridge. Located on APs only. ***LPAST? GAR?***

UTB 022 Cemetery
Large cemetery of *c.*100-130 cairns on low ridge to N of oasis. Cairns appear to have circular superstructures with linear arrangement. Located on APs only. ***GAR?***
***Ills: AF 2*, Fig. 35.4.**

UTB 023 *Qasr*?
Possible *qasr* site on NE side of *sabkha*. Appears as low mound with rectangular structure and probably no upstanding remains. Requires confirmation. Located on APs only. ***GAR-EMOD?***

UTB 024 Cemetery
Small cemetery of *c.*10-15 cairns scattered around W-facing embayment of low isolated hill. Located on APs only. ***LPAST? GAR?***

UTB 025 Cemetery
Scattered small cairns at SW end of low hill. Located on APs only. ***LPAST? GAR?***

UTB 026 Cemetery, enclosures
Small group of 10-15 scattered cairns on small low isolated hill. Group of three possible (animal?) enclosures below E side of hill. Require confirmation. Located on APs only. ***LPAST? GAR?***

UTB 027 *Qasr*
Small square *qasr* with corner towers, on S edge of slightly raised ground in wadi. Located on APs only. ***GAR-EMOD?***

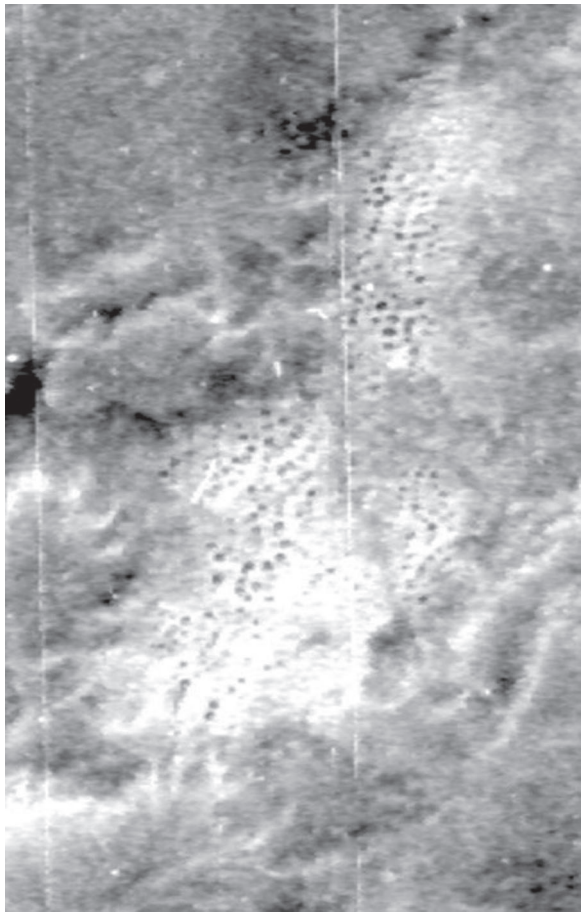


Figure 35.4. UTB 022, detail of cemetery from air photo.

UTB 028 *Qasr*?, enclosure
Possible *qasr* site, probably heavily eroded with no upstanding features. Possible small enclosure on NW side. Requires confirmation. ***GAR-EMOD?***

UTB 029 *Qasr*?, enclosures
Possible small tower *qasr*. Requires confirmation. Several (animal?) enclosures visible around scattered small hills just to W of site. Located on APs only. ***GAR-EMOD?***

UTB 030 *Qasr*?
Possible *qasr* site S of Mara. Located on APs only. ***GAR-EMOD?***

SECTION 36. MURZUQ [MURZUQ] (MZQ)

The Murzuq basin lies at the E end of the Wādī 'Utba, with the al-Ḥufra area to the E, of which Trāghan is the largest settlement (Fig. 34.1). Further E, the main settlements in modern times are Umm al-Arānib and Zuwīla, with Tmissa at the extreme E end of the series of wadis (Edwards 2001, 57-60).

Murzuq was by far the largest centre, having served as capital of Fazzān at various times in the early modern period, though with a very reduced population of only *c.*400 in 1930 (Scarin 1937b, 635-36). Several 18th- and 19th-century accounts of the town, of variable quality, occur in European travellers reports (Hornemann in Bovill 1964, 98-106; Lyon 1821; Clapperton in Bruce-Lockhart and Wright 2000; Denham in Bovill 1966, 277-85; Barth 1857; Richardson 1848; Nachtigal 1974, 81-4). The town was a key transit point on the 19th-century slave route (Wright 1998). A new plan of the town area (Fig. 36.9) has also been prepared from AP coverage, providing some further detail (Edwards 2001, 57-59; for an older plan, see Despois 1946, fig. 20).

No systematic survey was carried out in the Murzuq area, although several *qsur* have been recorded not far to the E. No other *qsur* have been identified on AP coverage close to the town or within the oasis area surrounding it. Some possibly 'Neolithic' graves were also noted on 'a piece of higher ground' *c.*1.5km N of the castle.

E of Murzuq, early travellers reports provide some useful information on the area. Several *qsur* sites can be tentatively located in the small villages scattered through al-Ḥufra. Lyon, for example, mentions ruined 'castles' at Zīzāw, 'Areg el Libban' ('Gusser Bighia') and 'Mokhaten'. Other potential sites in this area include marabout tombs, such as the tomb of Sīdī Bāshīr at Hij Hijayl, *c.*11km E of Murzuq (Lyon 1821, 204-7).

One substantial *qasr* in this area was recorded by CMD as 'Gasr Lawarat', but its exact location remains uncertain. This was a near square structure with corner towers (Fig. 36.1), built in a mixture of mudbrick and rough stone, including some distinctive 'herring-bone' stonework. Parts of the structure survived up to 5m high.

CMD noted some evidence of ancient cemeteries on ridges N of Trāghan, apparently severely robbed for stone. The ancient town of Trāghan itself remains unstudied apart from some photographic records from 1968 (Scarin 1937b, 637 – 812 inhabitants, 55,000 date palms, stressed the dilapidated state of the place in the 1930s). The late medieval town is known to have been a place of some importance, and a centre of Kanemi rule (Thiry 1995, 281-2) and also the site of the first *zawiya* in Fazzān, established by Hamza bin Tāmir in 1494. The castle, already in ruins, was noted by Lyon in 1819 (Fig. 36.2). This was restored during the colonial period

Figure 36.1. Qaṣr Lawarat, location uncertain, near Murzuq (photo: CMD 1968).

Figure 36.3. Trāghan E mosque (photo: CMD 1968).

Figure 36.2. Trāghan fort (photo: CMD 1968).

Figure 36.4. Trāghan central mosque (photo: CMD 1968).

Figure 36.5. Marabout tomb in Trāghan village (photo: CMD 1968).

Figure 36.6. Tomb of Sudanese Emir, Trāghan (photo: CMD 1968).

and was used as a government building, but apparently demolished in 1970 (el-Hesnawi 1990, 237, n.3).

Two substantial and potentially quite old mosques were recorded in 1968 (Figs 36.3-36.4); Lyon noted the presence of four mosques in the town in 1819. (*AF 1*, 97).

Marabout tombs in the town were also recorded by CMD (Fig. 36.5) and tomb of a 'Sudanese' Emir outside the town (Fig. 36.6). This may be the tomb of Mai Idrīs bin Ali, Sultan of Bornu who died at Trāghan while on the Pilgrimage in 1796 but it is possible there has been some confusion with an earlier Mai Ali of the Banū Nasur (Thiry 1995, 281-2). Duveyrier noted the presence of the tomb of 'Mai Ali' when he visited the region (1864, 277).

No ground survey was carried out by CMD between Trāghan and Zuwīla and the settlements in this area, (e.g. at-Ṭawīla, Maghawa, Hammera, Tiwīwī, Umm al-Arānib and al-Bdayir) remain unexplored. Some 19th-century accounts record the presence of *qsur* and other ruined sites at several locations in this area, Lyon for example noting a large ruin near at-Ṭawīla ('Touela') and a walled village, already ruined, at Hammera (1821, 209). While no ground survey was carried out, AP coverage for part of this area was plotted. This showed the presence of substantial groups of foggara running into at least two of the oasis settlements (Figs 36.7-36.8).

Figure 36.7. Village W of Zuwīla with foggara systems. Plotted from AP coverage (CMD/FP).

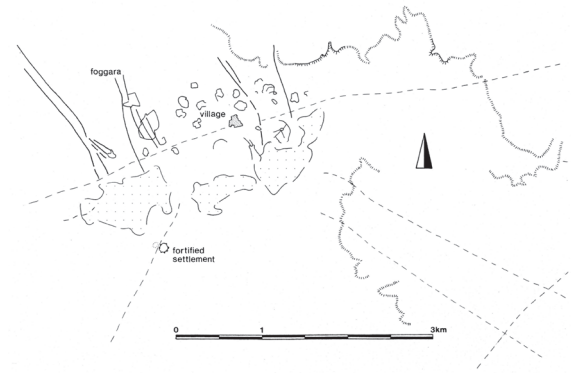


Figure 36.8. Village W of Zuwīla, with foggara systems and ruined walled settlement to SW of 1950s settlement. Plotted from AP coverage (CMD/FP).

The exact locations of these remains uncertain but they seem likely to be in the Umm al-Arānib area. The westernmost village (Fig. 36.8) lies *c.*8km W of the other and is notable for the presence of a substantial walled settlement S of the 1950s village. There may be a ruined *qasr* or similar structure within the area of the modern settlement. These sites must be close to the traces of foggaras noted by the FP in 1998 (see *AF 1*, 240).
***Ills: AF 1*, 350, 365; *AF 2*, Figs 36.1-9.**

MZQ 001 Urban settlement, wall, *qasr*, mosques, cemeteries **25°55.25/13°54.65**

The walled town of Murzuq (*c.*15ha area) appears to be of medieval origin. Its NW quarter was dominated by the castle with the large 'Turkish' barracks (Ruprechtsberger 1997, 78-79) and mosque. The main (Zuwīla) gate was on the E side, with Bāb al-Bahari in the W side of the N wall, and Bāb al-Gharbī SW of the citadel. A gate in the S wall had been walled up by the time of Nachtigal's visit, while Lyon noted that four of seven gates were walled up (1821, 96). Early accounts also contain brief descriptions of the castle in the NW part of the town and other information on the towns features, for example the seven mosques, of varying sizes, recorded by Lyon (1821, 199).

Figure 36.9. MZQ 001, plan of Murzuq, plotted from AP coverage (FP 2000).

A number of historical houses survive (such as that in which Barth allegedly resided during his time in Murzuq, Ruprechtsberger 1997, 74), but these are becoming increasingly dilapidated for want of attention.

The town was used as the base for CMD's 1968 field season, carried-out in conjunction with the NELF expedition. During that season, the area of the old castle, in the NW corner of the town, was surveyed and photographic records made of older structures in the town. The wall circuit appears to have some similarities with that at Jarma, with a combination of D-shaped and rectangular projecting towers representing more than one phase of development. The circuit was at some point reduced, with the S side of the town apparently then abandoned during the 19th century, probably in the early 1840s during the revolt of Abdel Jalīl against the Turks (Richardson 1848, ii, 344). By the 19th century the town cemeteries were situated on the S and E sides of the town. [1958, 1968, 1972, 1998]. **ISLAM, EMOD**
***Ills: AF 1*, 99, 182, 185; *AF 2*, Figs 34.1, 36.9-36.19.**

MZQ 002 *Qasr*
Small *qasr* with corner towers on raised ground *c.*3km NE of town, just to N of Zuwīla road. Corner towers and interval towers visible but walls appear much eroded. Located on APs only. ***GAR-EMOD?***

MZQ 003 *Qasr*
Small square *qasr* with corner towers in open ground close to S side of Zuwīla road, *c.*4km from Murzuq. Located on APs only. ***GAR-EMOD?***

MZQ 004 *Qasr*, enclosure, field systems
Small square *qasr* within rectilinear enclosure, with additional enclosures/walls to E, *c.*5km E of Murzuq. Considerable area of broken ground to E and SE may represent ancient settlement area. Further wall lines, probably from field systems, and abandoned wells visible to N. Requires confirmation. Located on APs only. ***GAR-EMOD?***
***Ills: AF 2*, Fig. 36.20.**

MZQ 005 *Qasr*?
Small irregular *qasr*/enclosure to SE of MZQ 004. Possible corner towers. Located on APs only.

MZQ 006 *Qasr*?
Small rectangular enclosure, possibly a *qasr*. Located on APs only. ***GAR-EMOD?***

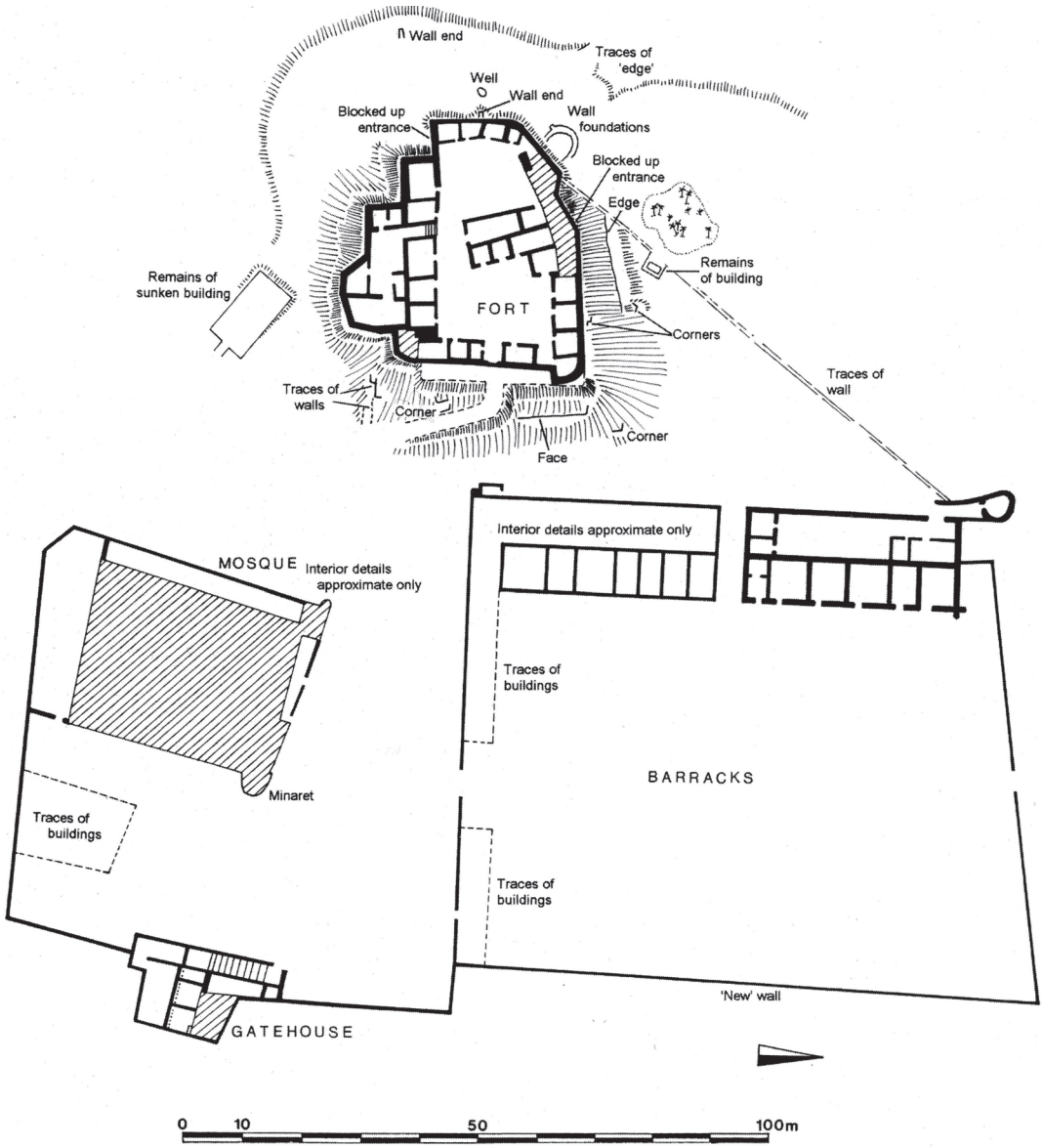


Figure 36.10, detailed plan of the castle, barracks and mosque compound in the N sector of Murzuq town, MZQ 001 (CMD 1968).

Figure 36.11. MZQ 001, view of castle looking S (CMD 1968).

Figure 36.12. MZQ 001, view of castle looking E (CMD 1968).

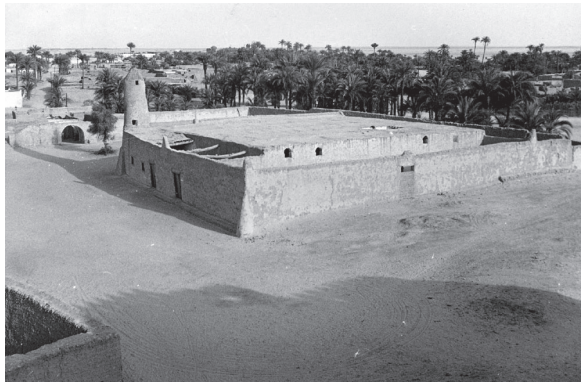


Figure 36.13. MZQ 001, view of castle mosque from top of castle, looking SE (photo: CMD 1968).

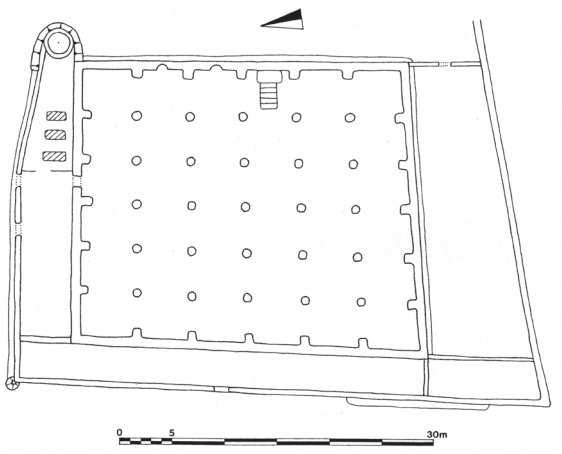


Figure 36.14. MZQ 001, plan of castle mosque (CMD 1968).

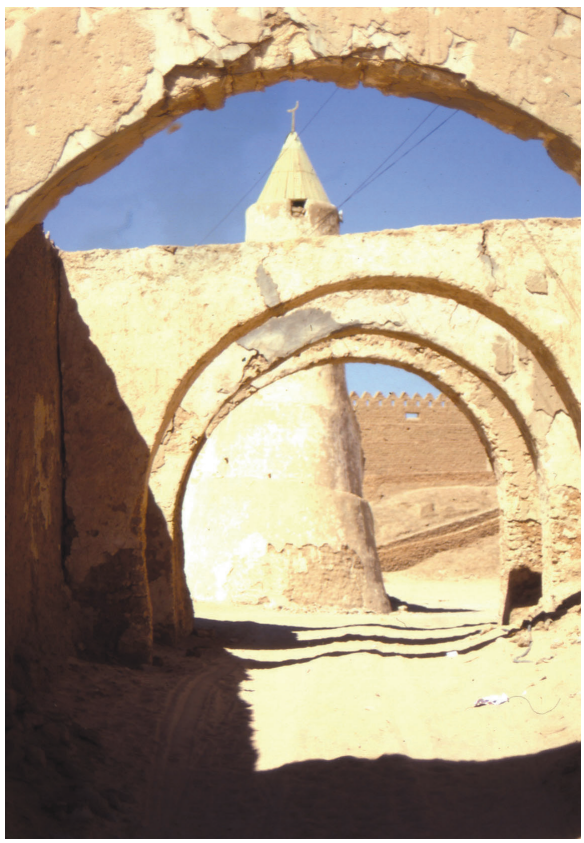


Figure 36.15. MZQ 001, entrance passage into castle compound, looking W towards mosque minaret (photo: FP 1998).

Figure 36.16. MZQ 001, mosque and castle looking W (photo: CMD 1968).

Figure 36.17. MZQ 001, state of preservation of town wall on W side (photo: FP 1998).

Figure 36.18. MZQ 001, typical traditional house in Old Murzuq (photo: FP 1998).

Figure 36.19. MZQ 001, tombstone of Ottoman governor in mosque (photo: CMD 1968).

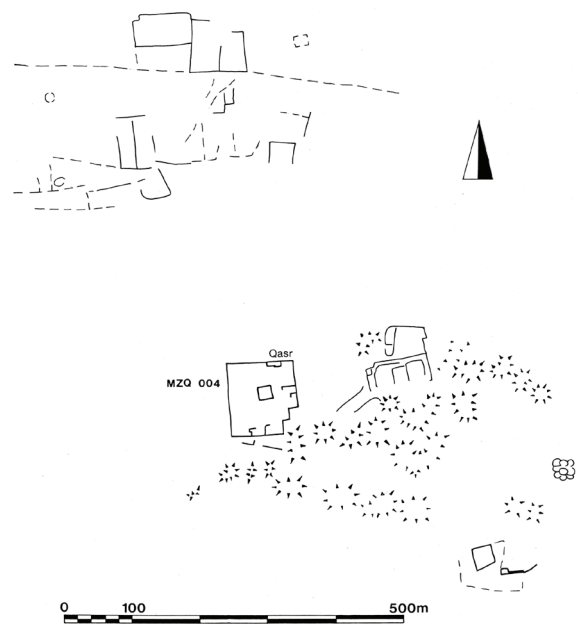


Figure 36.20. MZQ 004, sketch plan of qasr *and settlement taken from APs (FP 2000).*

Figure 36.21. MZQ 008, qasr *to E of Murzuq town (photo: FP 2001).*

MZQ 007 *Qasr*, enclosure?
Small square *qasr* with corner towers, to E of MZQ 006. Possible outer enclosure or ditch around it. Small building, possibly modern just to E. Located on APs only. ***GAR-EMOD?***

MZQ 008 *Qasr*, settlement 25°55.30/14°18.68
A ruined mudbrick *qasr* and associated settlement *c.*40km E of Murzuq, in the al-Ḥufra depression. The site was recorded in 2001 because of its striking similarity to the constructional technique and architecture of the *kasba* at Old Jarma (GER 001.065). The structure is built in the same kind of very hard, high salt content, mud blocks used at Jarma and the curved tapering towers of the main 'keep' of the *qasr* are closely similar to the Jarma *kasba*. A close connection in date and even of constructors is likely. Is this a Koraman fortification? ***ISLAM-EMOD?***
***Ills: AF 2*, Fig. 36.21.**

SECTION 37. ZUWĪLA [ZOUILA] (ZUL) AND WADI ḤIKMA

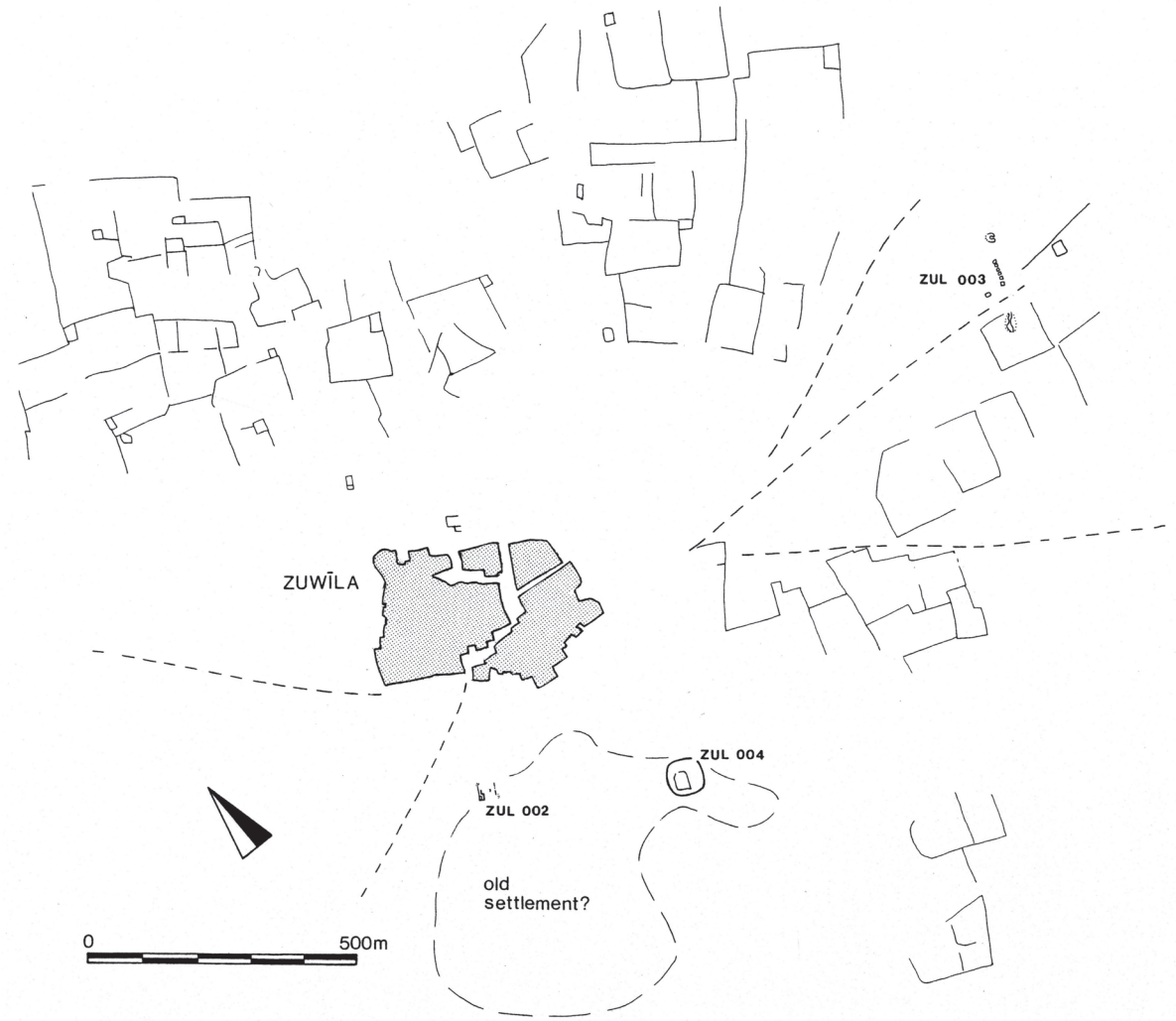


Figure 37.1. Map of sites in Zuwīla sector (CMD/FP).

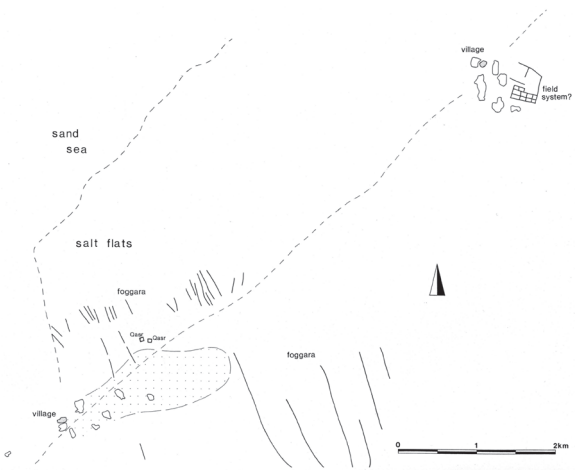


Figure 37.2. Foggara and qsur *in Tirbū area. Plotted from AP coverage (CMD/FP).*

The capital of early Islamic Fazzān at Zuwīla was by the 1930s a dwindling and dilapidated settlement (Scarin 1937b, 637-38 – 525 inhabitants, date palms 5,500). This does not do justice to the historical importance of the place, as attested by the number of references in early Arabic sources (Levtzion and Hopkins 1981). Zuwīla is located at a nodal point among the oases of al-Ḥufra ash-Sharqiyāt, at the N end of the one of the major routes which run through al-Qatrūn into N Chad (Edwards 2001, 60-64; cf. Bovill 1968; Martin 1969; Thiry 1995). This area remains largely unexplored archaeologically, although early travellers' accounts provide some limited information on the town and its recent history during the 19th century. The origin of the walled town remains unclear, but it seems likely that it supersedes an earlier settlement located a little further south in the area where the old mosque (ZUL 002) and possible *qasr* structure (ZUL 004) stand. A large spread of ancient settlement S of the town was indicated on Ziegert's sketch map of the town environs (1969,

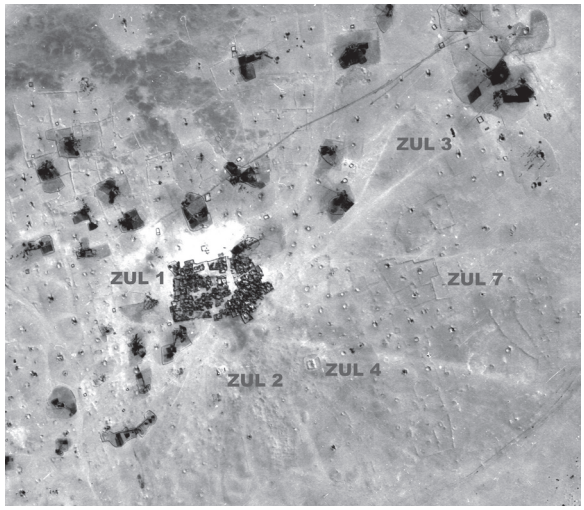


Figure 37.3. Air photograph of Zuwīla in the 1950s, showing principal sites (FP 2001).

Figure 37.4. ZUL 001, detail of NW corner of the wall circuit (photo: CMD 1968).

Figure 37.5. ZUL 001, detail of pisé construction of town wall (photo: CMD 1968).

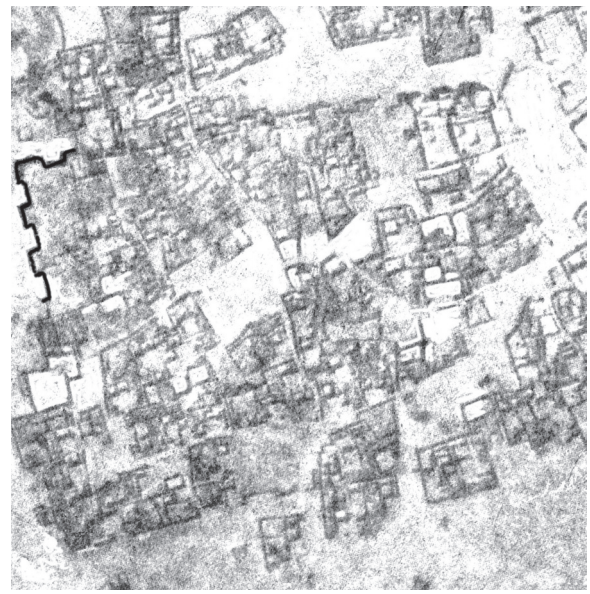


Figure 37.6. ZUL 001, detail from AP of walled area of Old Zuwīla (CMD/FP).

Taf.I, A). The AP coverage (of 1957) shows a large area of disturbed ground here, largely free of the wells and field systems that surround the other sides of the town.

Zuwīla's best known features are the town walls (ZUL 001), several substantial domed tombs E of the town (ZUL 003 – believed to be those of the Banū Khaṭṭāb), and the old mosque (ZUL 002), noted by several early travellers and more recent researchers (Pace *et al.* 1951, 416-19, fig. 183; Ziegert 1969, 49-52, Taf.IC, XIIA). The old mosque seems to have been in decay by the early 19th century (see Bovill 1964, 94-95, for Hornemann's account; Lyon 1821, 214).

Some reconnaissance survey was carried out by CMD in and around the town in 1968, with a further brief visit being made in 1972. The subrectangular walls of the old town, briefly described by Caputo (Pace *et al.* 1951, 417-8, fig.183) were again recorded by CMD in 1968, by which date, the rapid encroachment of modern housing was threatening to destroy or at least obscure large sections of the walls. Ziegert also worked in the area, excavating a grave in one of the cemeteries on the S side of the town (1969, 51-2). His map also indicates a *qasr* in a village to the SW of the town, but this could not be identified on the AP coverage.

Material collected by the Antiquities Service from the Zuwīla environs was examined by John Hayes in 1971. This included ARS spanning late 1st-6th century The exact source of the material is not clear from the archive notes, but the cemeteries seem most likely. Further imported coarsewares and finewares as well as glass were collected in the area of the Old Mosque in 1972 and further Roman and Islamic imports were noted in brief visits by FP in 1998 and 2001.

The landscape around the oasis of Zuwīla is criss-crossed with field boundaries, defining a dense grid of

gardens, often with the pock mark of a large well at its centre (Fig. 37.3)

S of Zuwīla, the Wadi Ḥikma runs through al-Qaṭrūn (Scarin 1937b, 640 – 696 inhabitants, 40,000 date palms) (N24°53.6 E14°31.5) and Tajirhī (Scarin 1937b, 640 – 200 inhabitants, 7,000 date palms) (N24°19.75 E14°16.05). Other smaller settlements include Tirbū and Majdūl. In 1819 Lyon reported ruined *qsur* at both places and ruined castles at al-Qatrūn and Tajirhī, the latter loopholed for musketry (1821, 220-8).

No systematic survey has been carried out in this region, but the wadi seems to contains several *qsur*. South of al-Qatrūn, a *qasr* is reported at Qaṣr Hawa, with three others in the small oasis at al-Bakhī, a little to the SE (Qaṣr Awlād 'Ammi, Qaṣr Kimba and Qaṣr Serendibe). Further S, Qaṣr Tugé Fraoma, lies *c.*20km N of Tajirhī and Qaṣr Agama Kuruwa *c.*10km to its S (Thiry 1995, 92-97). A few burials were excavated in the 1950s by a French team at Tajirhī, where they also identified the presence of foggaras (Bellair *et al.* 1953; Bellair and Pauphillet 1959). The CMD archive also includes reports of possible cemeteries and foggara in the Tirbū and Umm al-Adam further E. Plots of AP coverage of Tirbū show several foggara in that area (Fig 37.2). some of which were located on the ground in 1968.

***Ills: AF 1*, 96; *AF 2*, Figs 37.1-37.3.**

ZUL 001 Urban settlement, *qasr*, wall **26°10.09/15°07.71**

The sub-rectangular town walls of Zuwīla, enclosing an area of 3-3.5ha, are of unusual construction, in comparison with other walled Fazzānese towns. The wall line is presumed to have been roughly rectangular but the SE quadrant has been lost beneath later buildings. Regular external rectangular towers were incorporated in the original design. The wall is built in pisé style, with sections of *c.*2m length x 1m height x up to 1m thick having been formed within wooden shuttering. The material used is a very gravely sand/mud mix, which has apparently been rammed solid. The walls survive to a maximum height of *c.*6m. The dating of the circuit is uncertain, though must be post-11th century as al-Bakri describes Zuwīla as unwalled. A sample for AMS dating has been taken.

Figure 37.7. ZUL 001, detailed plan of (medieval?) walls (CMD/FP).

Figure 37.8. ZUL 001, central mosque in old town, opposite Turkish fort (photo: CMD 1968).

Figure 37.9. ZUL 001, street with shaded bench (photo: FP 1998).

Figure 37.10. ZUL 002, view of E wall of old mosque, looking W (photo: CMD 1968).

Figure 37.11. ZUL 002, view of E wall of old mosque, looking E (photo: CMD 1968).

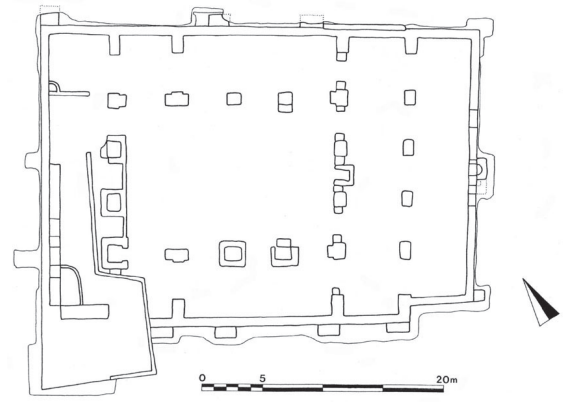


Figure 37.12. ZUL 002, plan of the White Mosque (FP after Abdussaid 1979).

The Turkish fort survives at the core of old Zuwīla. The domestic buildings of the old town are now very dilapidated, some occupied by Tubu migrants, others in ruins. [1968, 2001]. ***EISLAM, ISLAM, EMOD***
***Ills: AF 1*, 96, 144; *AF 2*, Figs 37.3-37.9.**

ZUL 002 Mosque 26°09.92/15°07.51
Elements of walls of an old mosque lie outside the S side of the town, measuring *c.*30 x 34m. The standing remains were planned by CMD in 1968 and some further observations were made in 1972, prior to its excavation by H. Ziegert and Ali Abdusalem in 1973 (mosque also described by Hornemann in 1798, see Bovill 1964, 94-95). Much of the large tower in the SW corner was thought to be of relatively recent (19th century?) date, though it seems plausible that this was the basis of the minaret.

Reconstructing the plan of the interior was problematic. The isolated central block of masonry was locally identified as the *mihrab*. An open court with perhaps colonnades along the N and S sides was suggested, with presumably a further hall on the E side with a doorway to the E. The *mihrab*, built in dark brown bricks, was part preserved with a small length of N-S wall on its S side.

CMD's comments on the visible architecture are superseded by the data from the excavation (Abdussaid 1979; el-Mahmudi 1997, s.v. Zuwīla; Ziegert and Abdusallam 1973). The mosque is large by Fazzānese standards, 34.5m E-W and 24m N-S (30m including the minaret projecting at the SW corner). The prayer hall is 11.5x24m, but the structure shows signs of several phases of modifications, with the original mosque dating to the 11th century (this is almost certainly the 'cathedral mosque' mentioned by al-Bakri). [1968, 1972]. **ISLAM**
***Ills: AF 1*, 96, 182, 364; *AF 2*, Figs 37.3, 37.10-37.12.**

ZUL 003 Cemetery, funerary monuments 26°09.96/15°08.37
Large cemetery area with tombs of Banū Khaṭṭāb, *c.*1.2km to E of town. Tombs restored *c.*1970. The association of these tombs with the Banū Khaṭṭāb broadly dates them to the 10th-12th century

Figure 37.13. ZUL 003, tombs 1-6, from NE (photo: CMD 1968).

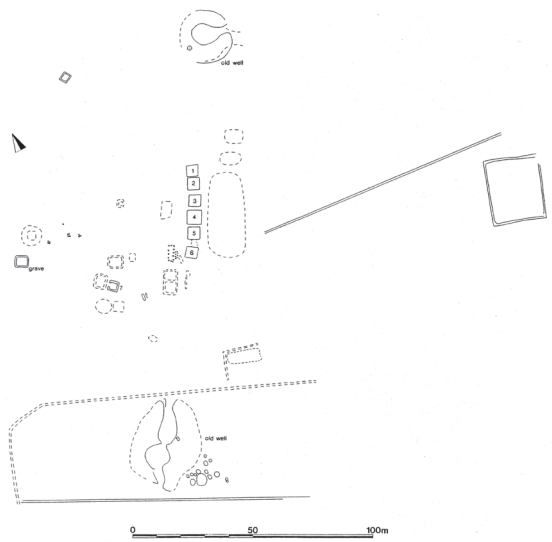


Figure 37.14. ZUL 003, plan of cemetery and tombs of the Banū Khattāb (CMD/FP).

The CMD survey made an extensive photographic record of the main tombs, providing an invaluable record of their condition prior to restoration. At that time, much of the stone cladding of the structures had been robbed on their W sides, but they appeared much better preserved on their E sides. These photographs are important as they show the state of preservation of the monuments prior to restoration work by the Department of Antiquities.

Tomb 1 had lost much of its N side before 1968, and much of surviving N wall may have been a rebuild, lacking large blocks of type used in S side of structure (and Tombs 2-5). **Tomb 2** was constructed very close to Tomb 1. The dome was still intact in 1968 although much of the stone cladding had been lost from the W side. The structure was primarily mudbrick with six courses of horizontally laid stone slabs framing an external stone cladding. Dome is 'false corbelling'. **Tomb 3** was very similar to Tomb 2 using the same technique of stone cladding; two windows in lower W face and one on E side. **Tomb 4** differs from the other tombs with presence of two arched niches in the N and E sides. There was also a narrow offset in the walls *c.*3.2m above ground level. The niche on the N side might suggest that this tomb predated Tomb 3 which otherwise

Figure 37.15. ZUL 003.1-2, tombs from E (photo: CMD 1968).

blocks it. Fragments of wooden sill beams survived across windows as well as across angle to take dome. The interior walls were plastered. **Tomb 5** was much decayed and had lost its dome and much of superstructure by 1968. The lower exterior walls were largely rough stone, interior mainly mudbrick. **Tomb 6** at the S end of the row was built entirely of mudbrick and was relatively intact in 1968. The arched heads of the two windows on the E and W sides were higher than the springing of the pendentive. Tomb 6, lacking the exterior stone cladding, but otherwise identical in form to numbers 1-5 may, well be the latest in

Figure 37.16. ZUL 003.1-2, tombs from W showing horizontal stone courses (photo: CMD 1968).

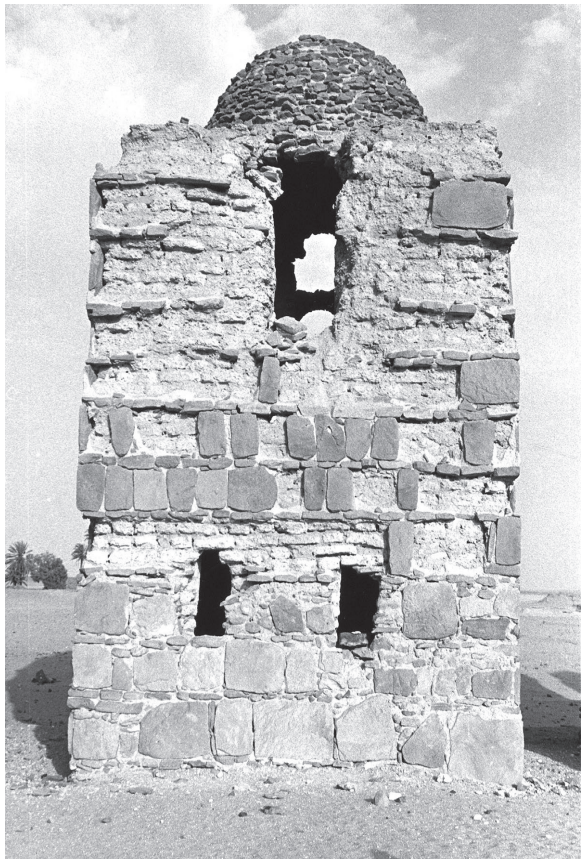


Figure 37.17. ZUL 003.3, from NE showing well-preserved stone cladding (photo: CMD 1968).

Figure 37.18. ZUL 003.4, arched niches on E side (photo: CMD 1968).

the group and have been awaiting its outer facing when the dynasty of the Banū Khaṭṭāb came to an end. **Tomb 7** lies to the SW of the main group of tombs. Constructed in mudbricks, larger than those used in the other tombs. Preserved to level of base of dome *c.*3m high. Arched door on W side. Small windows in N, E and W sides. Several other mounds in this area probably mark other mudbrick tomb superstructures.

Recent excavations under the auspices of the Department of Antiquities have shown that the standing tombs are surrounded by an extensive cemetery of non-monumental burials, with no surface structures.

Figure 37.19. ZUL 003.4, interior of tomb showing dome and wooden beams (photo: CMD 1968).

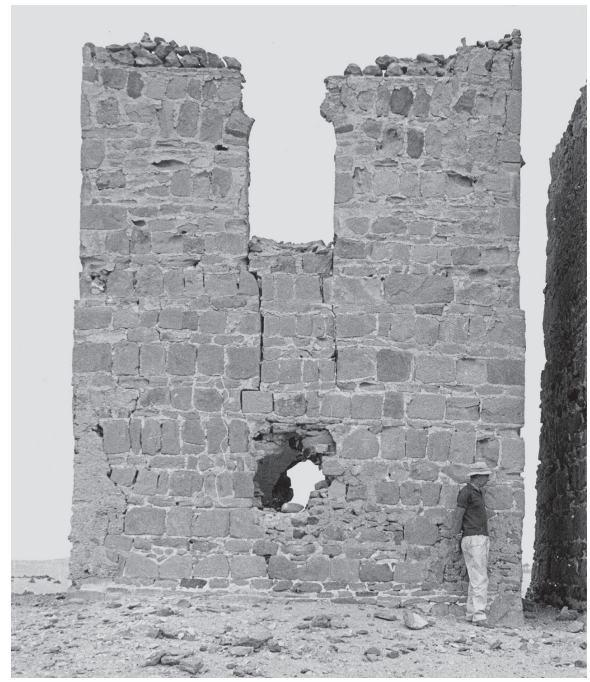


Figure 37.20. ZUL 003.5, tomb from E (photo: CMD 1968).

AMS samples have been taken from tomb 1 and tomb 6 in an attempt to prove the connection between the tombs and the Banū Khaṭṭāb dynasty. [1968, 2001). ***EISLAM, ISLAM***
***Ills: AF 1,* 96, 97; *AF 2*, Figs 37.3, 37.13-37.22.**

ZUL 004 *Qasr?*, enclosure
Identified on APs, this is an apparent *qasr* site *c.*300m E of ZUL 002 at opposite edge of possible urban site that preceded the extant walled town. Rectangular core structure *c.*30-35m across with towers at corners and centre of walls. There is also an outer enclosure wall *c.*60-70m across. Not located on ground. ***GAR-EMOD?***
***Ills: AF 2*, Figs 37.1, 37.3.**

ZUL 005 Cemetery
Cemetery area *c.*2km S of town. Previously robbed and part-excavated? Sherds of imported pottery on heavily

Figure 37.21. ZUL 003.6, the large mudbrick tomb from E (photo: CMD 1968).

Figure 37.22. ZUL 003.7, the smaller mudbrick tomb from W (photo: CMD 1968).

disturbed surface (see below). These are probably the graves described by Ziegert (1969, Taf.IB). [1968]. **CGAR**

ZUL 006 Cemetery 26°09.51/15°07.59
Area of a cemetery to E of ZUL 005, apparently where Ziegert also excavated. There are a number of excavated hollows that have evidently pierced a gypsum substratum. Local informants mention underground funerary chambers. Finds of Garamantian pottery suggest a pre-Islamic date. CMD recorded ARS, glass and beads here [1968, 2001]. **CGAR**

ZUL 007 Field system 26°09.81/15°08.26
A small area of possible field/garden boundaries visible on the APs was inspected on the ground in 2001. These comprise low banks of heaped up earth and stones. There are no traces of associated buildings and pottery is generally sparse (a few sherds of Garamantian and possibly Islamic pottery were recovered). The interpretation of these traces as marking the limits of abandoned gardens/fields appears confirmed. [2001]. **CGAR [EMOD]**
***Ills: AF 2*, Figs 37.1, 37.3.**

ZUL 008 Cemetery 26°09.71/15°07.47
Another cemetery area on a low mound to the S of Zuwīla reported by local informant in 2001. It is possible that Ziegert excavated here. The site is now on the fringe of the built-up area. [2001]. ***GAR?***

ZUL 009 Cemetery 26°09.57/15°07.36
Another cemetery area reported by a local informant on the S side of Zuwīla. There is evidently a subterranean chamber, cut into a thick gypsum strata here. Believed to be pre-Islamic. [2001]. ***GAR?***

ZUL 010 *Qasr*, settlement, well 26°10.52/15°07.13
Situated *c.*2km NW of Zuwīla old town, this site comprises the remains of a tower-like *qasr* and an enclosed settlement (in total covering at least 1ha). The tower, in yellow mudbrick, stands *c.*8m high. There is a very deep well alongside the *qasr*. A large volume of Garamantian pottery and Islamic glazed wares was noted on the surface and a sample collected. [2001]. **CGAR, ISLAM**

ZUL 011 Foggara group 26°10.25/14°57.11
A group of at least six foggaras crossing the modern road in the vicinity of al-Bdayir, *c.*14-18km W of Zuwīla. Traceable in landscape from GPS coordinates above to 26°09.593/14°59.077. The spoil rings of one example were traced for *c.*660m N of the road and ran into the oasis *c.*400m S of the road. [2001]. ***GAR***
***Ills: AF 1*, 240.**

SECTION 38. WĀDĪ ASH-SHĀṬĪ [WĀDĪ DABDAB] (DBD)

The CMD Survey did not carry out any systematic survey in the Wādī ash-Shāṭī but some limited exploratory work took place E of Brāk in 1972 in the area of Dabdab (Scarin 1937b, 613 records a village here of 148 inhabitants and 5,000 date palms). Several of the villages of the area were also visited between 1958-1977 and the CMD archive includes some photographs of older buildings, springs and other features of interest from the area around Brāk. (Fig. 38.1-38.2). The most extensive archaeological research to have been carried out to date concerns the rock art of the Wādī ash-Shāṭī (Le Quellec 1987; 1989; 1990). Given that the Wādī ash-Shāṭī had a larger population that the Wādī al-Ajāl in the 1931 census, contains the major iron ore resources of Fazzān and is blessed with the most abundant springs, it is inconceivable that intensive survey work would not reveal very substantial ancient and medieval settlement. Daniels (1989, 59) highlighted the regions of Brāk (Scarin 1937b 613 – 1,248 inhabitants, 1,700 date palms) and Idrī (Barth 1857, 135-36; Bovill 1966, 179; 181-82; Scarin 1937b, 616 – 552 inhabitants, 10,000 date palms) as being particularly promising. Research in this region of Fazzān remains one of the most urgent priorities.

***Ills: AF 2*, Figs 0.3, 38.1-38.2.**

Figure 38.1. Old Brāk, walled village (photo: CMD 1972).

Figure 38.2. Old Brāk, one of the main springs in the oasis (photo: CMD 1972).

DBD 001 Cemetery

A small cemetery included some well-constructed type 3a drum cairns as well as stepped structures and mound cairns. Some robbed structures had rectangular stone-lined cists below them. [1972]. ***GAR?***

***Ills: AF 2*, Figs 38.3-38.5.**

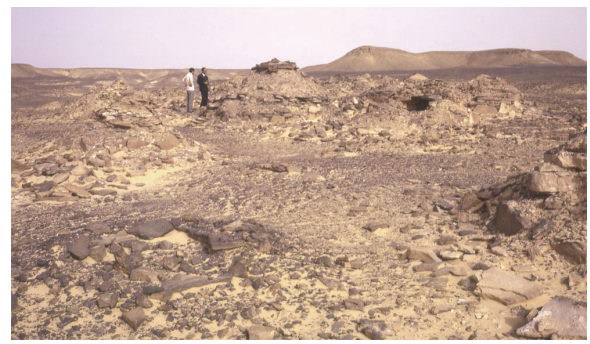


Figure 38.3. DBD 001, cemetery, general view (photo: CMD 1972).

Figure 38.4. DBD 001, detail of a type 3b drum tomb (photo: CMD 1972).

Figure 38.5. DBD 001, detail of a type 5e drum tomb with conical superstructure (photo: CMD 1972).

DBD 002 Settlement

A rectangular mudbrick building with stone foundations build on the side of a rock outcrop on the edge of the wadi. Not surveyed and date unknown. [1972]. ***GAR-EMOD?***

***Ills: AF 2*, Figs 38.6-38.7.**

Figure 38.6. DBD 002, ruined building by rocky outcrop (photo: CMD 1972).

Figure 38.7. DBD 002, detail of ruined building (photo: CMD 1972).

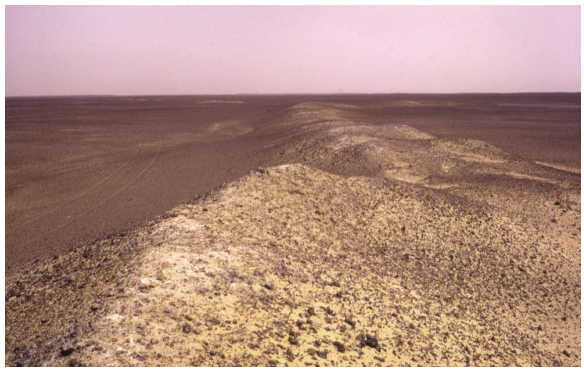


Figure 38.8. DBD 003, line of probable foggara spoil mound (photo: CMD 1972).

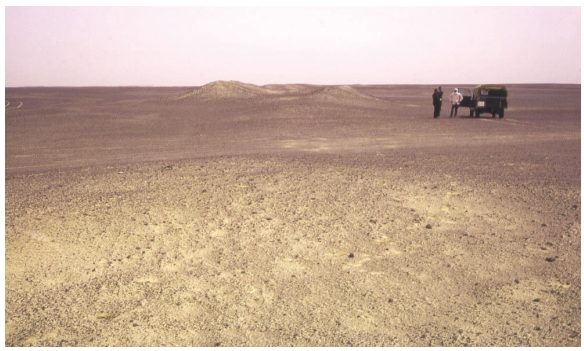


Figure 38.9. DBD 003, probable foggara (photo: CMD 1972).

Figure 38.10. DBD 004, rock art location (photo: CMD 1972).

Figure 38.11. DBD 004, detail of rock art scene with elephant and bovines (photo: CMD 1972).

DBD 003 Foggara group
Several foggara channels were noted in the Dabdab area, some which survived as substantial upstanding banks. The traditional method of irrigation in the Wādī ash-Shāṭī region involves springs, rather than the foggara and animal wells of the al-Ajāl. The presence in one region of the ash-Shāṭī of foggaras is thus of considerable interest. [1972]. ***GAR***
***Ills: AF 2*, Figs 38.8-38.9.**

DBD 004 Rock art
Several small groups of rock engravings were noted along the S end of the Wādī Dabdab. **PAST**
***Ills: AF 2*, Figs 38.10-38.11.**

SECTION 39. THE DAHĀN UBĀRĪ [EDEYEN UBARI] (EDU)

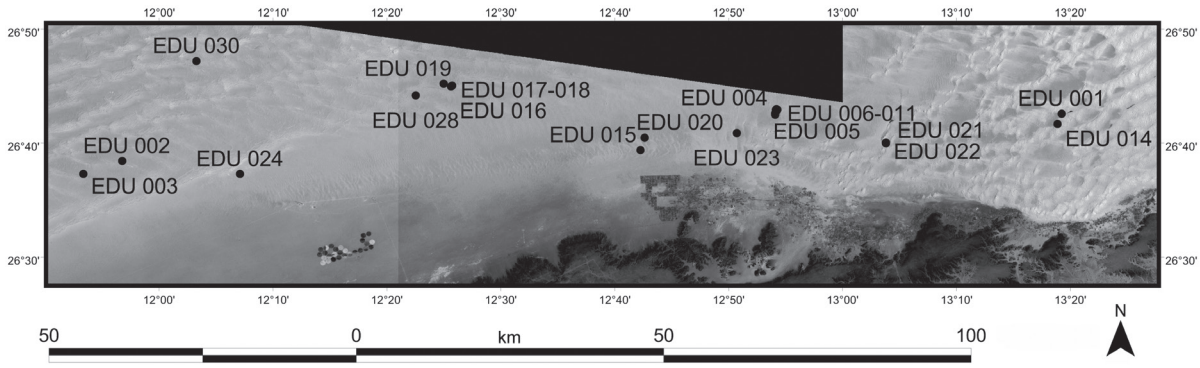


Figure 39.1. Satellite image showing the locations recorded in the Dahān Ubārī (FP 2002).

The CMD research appears to have largely ignored the great dunefield of the Dahān Ubārī to the N of the Wādī al-Ajāl. In the absence of reliable 4WD vehicles and good navigational aids the sand sea can be an intimidating place – the first foray of the FP ended in near disaster with a burnt-out clutch. However, the S edge of the sand sea became a prime area for the FP geo-prospection, seeking to assess on the ground the physical character of potential palaeolake sites identified on satellite images (*AF 1*, 37-74; Drake *et al.* 2006; McLaren *et al.* 2006; White and Mattingly 2006; White *et al.* 2006). Such locations often proved to have accompanying evidence of human activity in terms of lithics scatter, pottery, ostrich eggshell fragments, grindstones and so on. Archaeological material collected in the course of this research was allocated numbers in an EDU sequence. Most of the sites so designated are located N and W of Ubārī.
***Ills: AF 2*, Fig 39.1; *cf.* also 11.1.**

EDU 001 Lithics scatter, occupation? 26°42.51/13°19.19
Lithics and associated pottery found by an outcrop of aeolionite on the northern edge of the Lake Mandara basin. Lithics include a biface, a biface trimmer, a large blade, a perforator, a denticulate, four scrapers and a transverse projectile point. This collection suggests two phases of activity, an early Acheulean and a later, probably Pastoral phase. [1999 = AEOL 1]. **PAL, PAST**
***Ills: AF 2*, Fig. 42.1.**

Figure 39.2. General view of the EDU 005 palaeolake basin (photo: FP 2001).

EDU 002 Lithics scatter 26°38.38/11°56.77
Palaeolake site in the Ubārī sand sea. The lake basin consisted of three terraces and the lithics were predominantly located on the lowest one. A total of 114 pieces were recovered, including a backed bladelet, a perforator, a scraper and a bifacial projectile point. All these pieces would best fit within an Early/Middle Pastoral phase. [2000 = Bal X]. **MPAST**
***Ills: AF 2*, Fig. 42.4.**

EDU 003 Lithics scatter 26°37.24/11°53.35
A different part of the same large palaeolake site in the Ubārī sand sea as EDU 002. A dense scatter of lithic tools of Acheulean/Mousterian date at the S end of a large palaeolake, in a major interdune corridor. Three points were collected along with a flake knife, a denticulate and five bifaces. There are many other lithic scatters around this palaeolake, not specifically recorded here. The location would repay more detailed survey. [2000 = Bal 3]. **PAL**

EDU 004 Lithics scatter 26°42.62/12°54.07
Mixture of Palaeolithic blade and small hand axe and Holocene cores and blades. [2000, initially recorded as TIN 041]. **PAL, PAST**

EDU 005 Lithics scatter, occupation 26°42.49/12°54.15
The entire palaeolake basin is a continuous scatter of lithics, pottery, ostrich egg shell and bone found on all three terrace levels (though material is more common on the lower two terraces). Acheulean, Mousterian and Aterian lithics are concentrated on the middle terrace and the sides of the dunes while Mesolithic and Neolithic material is predominantly found on the lowest terrace. Samples of Melanoides shells and associated organic

Figure 39.3. EDU 015, bifaces and other lithics on sand by palaeolake shore (photo: FP 2000).

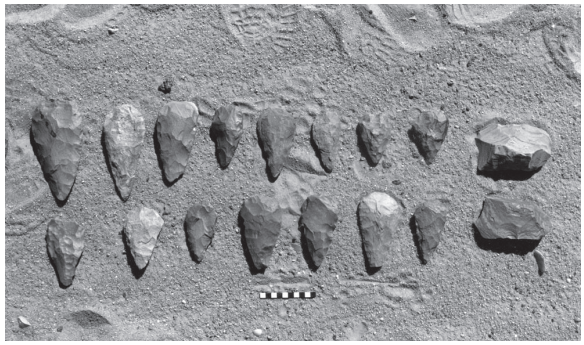


Figure 39.4. EDU 015, collection of bifaces from the palaeolake site (FP 2000).

matter were taken for dating. A concentration of about 30 Acheulean hand axes was found on the SE corner of the basin a small number of which were collected. 26°42.773/12°54.063 Palaeolithic site consisting of Acheulean hand axes and scraper located on the north west side of the basin.

Despite the general abundance of lithics along the edges of the palaeolake, a few notable lithic scatters could be identified as outlined below (EDU 004-13). [2000, 2001]. **PAL, PREPAST, MPAST**
***Ills: AF 1*, 330, 335; *AF 2*, Fig. 39.2.**

EDU 006 Lithics scatter 26°42.79/12°54.07
Holocene core, two bladelets and larger blade with retouch. [2000, initially recorded as TIN 042]. **PAST**

EDU 007 Lithics scatter 26°42.85/12°54.12
Palaeolithic scraper and five Holocene microliths. [2000, initially recorded as TIN 043]. **PAL, PAST**

EDU 008 Lithics scatter 26°42.96/12°54.15
Two Holocene cores and two bladelets from top of larger mesa. [2000, initially recorded as TIN 044]. **PAST**

EDU 009 Lithics scatter 26°42.87/12°54.09
2 small blades, Holocene microlith core and blades from top of western mesa. [2000, initially recorded as TIN 045]. **PAST**

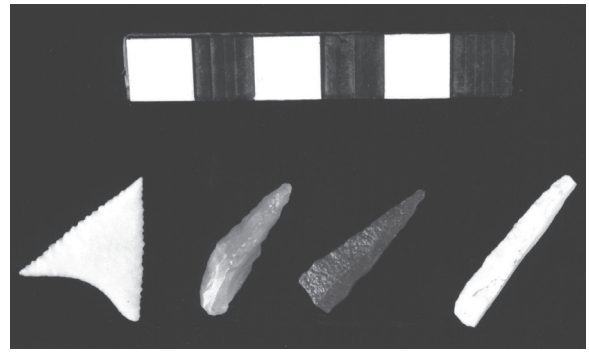


Figure 39.5. EDU 016 collection of projectile points (photo: FP 2001).

EDU 011 Lithic artefact 26°42.61/12°54.24
Holocene leaf point. [2000, initially recorded as TIN 047]. **PAST**

EDU 014 Settlement 26°41.69/13°18.82
Abandoned village by Lake Mandara. Quern collected. ***ISLAM-EMOD?***

EDU 015 Lithics scatter 26°39.36/12°42.25
A large number of late Acheulean bifaces (12 collected), lanceolate bifaces and spread of lithics on gravels and sand on margins of probable palaeolake. (FP2000-03.1) [2000]. **PAL**
***Ills: AF 2*, Figs 39.3-39.4, 42.1.**

EDU 016 Lithics scatter 26°45.01/12°25.66
Dahān Ubārī palaeolake, on the west side of the highest terrace level. Pottery, ostrich shell and lithics. (EDU 016-19 are from the same large palaeolake basin). [2001]. **PAST**
***Ills: AF 2*, Figs 39.5.**

EDU 017 Lithics scatter 26°45.00/12°25.66
Dahān Ubārī palaeolake, on the west side of the highest terrace level. Pottery, ostrich shell and lithics. [2000]. **PAST**

EDU 018 Lithics scatter 26°44.98/12°25.59
Dahān Ubārī palaeolake. The lake contains three distinct terraces. Early activity indicated by Acheulean biface. Holocene activity indicated by pottery, ostrich shell and lithics and bone. [2000]. **PAL, PAST [EGAR?]**

EDU 019 Lithics scatter 26°45.15/12°24.93
Dahān Ubārī palaeolake. Lowest point in basin containing rich deposits of organic matter (sampled for AMS dating), lithics and pot. [2000]. **PAST**

EDU 020 Lithics scatter 26°40.46/12°42.62
Lithics and petrified wood scatter *c.*600 x 300m. (FP2000-03.2) [2000]. **PAL, PAST**

Figure 39.6. EDU 026 collection of lithics (photo: FP 2001).

Figure 39.7. EDU 028, antenna tomb of probably late Pastoral date, built of calcrete slabs on top of a dried up lake (photo: FP 2002).

Figure 39.8. EDU 030, cemetery site of low cairns, date unknown, but possibly late Pastoral, in sand sea near margins of a dried up lake (photo: FP 2002).

EDU 021 Lithics scatter 26°40.00/13°03.78
Dahān Ubārī palaeolake. Lithics scatter on lowest of three terraces. Four layers of organic matter sampled for AMS dating. [2001]. **PAST**

EDU 022 Lithics scatter 26°39.93/13°03.76
Same palaeolake as EDU 021. Sample from a large continuous scatter, including two Acheulean bifaces, along the side of the entire length of the middle terrace. [2001]. **PAL, PAST**

EDU 023 Lithics scatter 26°40.83/12°50.68
This site consisted of cemented aeolian sands, it is not a palaeolake as such but probably represented a region where the water table was close to the ground surface at various times in the past. A single knapping site was identified and lithics collected – mainly Holocene but also including two Acheulean bifaces. [2001]. **PAL, MPAST, [EMOD]**

EDU 024 Lithics scatter 26°37.23/12°07.05
Very large palaeolake basin on the edge of the sand sea near the Repsol oil field. Only a small part of this complex basin was investigated. A large lithics and pottery scatter was sampled and organics were collected for radiocarbon dating. [2001]. **MPAST**

EDU 026 Lithics scatter, occupation 26°18.14/11°18.84
Large lithics and pottery scatter by a large palaeolake basin Location omitted on Fig. 39.1. [2001]. **PAST**
***Ills: AF 2*, Fig. 39.6.**

EDU 027 Lithics scatter 26°19.55/12°16.49
A gravel field in an interdune corridor, with abundance of bedrock outcrops at an altitude of 630m. Few lithics and no evidence of palaeolake sediments. [2002]. **PAL?**

EDU 028 Lithics scatter, antenna tomb 26°44.14/12°22.52
Palaeolake with two terraces and abundant organic sediments with concentrations of shells (both of which were collected for absolute dating). Widely (but not densely) scattered lithics, predominantly at the W end of the basin. The antenna tomb was located on the upper terrace, overlying the duricrust and made from calcrete. [2002]. **MPAST**, **LPAST**
***Ills: AF 2*, Fig. 39.7.**

EDU 029 Pottery scatter 26°14.32/11°25.15
Single 'berber' pot lying on gravel surface. [2002]. **GAR-EMOD?**

EDU 030 Lithics scatter 26°47.17/12°03.27
A large interdune lake basin, though no organic-rich lake sediments evident. Two different palaeolake levels evident, but not obvious due to the large size of the interdune basin. Some pottery and broken querns on the surface of the palaeolake sediments. 50+ cairn tombs along the southern shoreline of the palaeolake. [2002].
LPAST?
***Ills: AF 2*, Fig. 39.8.**

SECTION 40. AMS AND RADIOMETRIC RADIOCARBON DATES FROM THE CMD WORK AND FP.

By D. J. Mattingly, D. C. Thomas, J. Meadows, R. Pelling, J. N. Dore and D. Edwards

Charles Daniels (CMD) obtained a small number of radiocarbon dates from his work at Zinkekrā, revealing the potential for this sort of work to elucidate the dating of sites in an area of limited excavation and lacking fully evolved ceramic type series. As part of the work of the Fazzān Project, numerous organic samples (mostly carbonised wood and seeds) were collected from both the excavation and from survey of a range of buildings in the FP zone. Excavation focused on a deeply stratified urban sequence at Jarma, running from the latter centuries BC to the early 20th century and encompassing the capital of the Saharan Garamantian kingdom (floruit 500 BC - AD 500) and its medieval successors on the same site. A preliminary listing of both the CMD and FP dates has already been published (Mattingly *et al.* 2002) and this Section updates this with some additional determinations and further comments. The total number of radiocarbon dates available for this part of Fazzān is now over 75.

The results can be divided into four broad groups. The first group comprises a series of dates for the early Garamantian escarpment settlements at Zinkekrā and Tinda, comprising both CMD's radiometric and AMS dates and a few additional FP AMS dates. The second group relates to the sampling of specific standing structures at Old Jarma (GER 001), the medieval mudbrick city overlying the Garamantian capital (Garama). Samples were taken from a number of key standing structures to help fill out the chronology of the post-Garamantian history of the site. The third group of samples derived from wider survey work within the Wādī al-Ajāl and the Wādī Barjūj/Wādī 'Utba area, many relating to defensive structures (*qsur*) which have generally been assumed to be Islamic in date. A fourth batch of dates relates to the stratigraphic sequence recorded in the FP excavations at Jarma itself, helping to pin down the chronology of 10 main phases of construction recorded in the excavations. These dates are listed here in advance of the final publication of that site in Archaeology of Fazzān 4. A list of all dates is provided in Tables 40.1-40.4 and specific comments are added below on the three groups and the overall significance of the dates. The geographical specialists with the FP have also obtained a suite of other scientific dates using OSL, ^{226}Ra and Uranium/Thorium dating methods (Drake *et al.* 2004; 2006; White and Mattingly 2006).

In recent years the Italian team working in the Tadrart Akākūs and Wādī Tanzzūft, 350km SW of the Wādī al-Ajāl, have also made significant advances through their own intensive programme of radiocarbon dating (Cremaschi 2001, 7, 16, 19; Cremaschi and di Lernia 1998a, 21, 39; di Lernia and Manzi 2002, 15, 282-83). With the notable exception of a few dates from the Garamantian 'fort' at Aghram Nadarif (Cremaschi 2001, 19; Cremaschi and di Lernia 1998a, 21; Liverani 2006), the vast majority of their dates relate to the earlier Holocene Pastoral phases (broadly 10000-3000 BP). Cremaschi has also had some success combining AMS dating with dendrochronology using the hard wood of the long-lived Tassili cypress (*Cupressus dupreziana*) (Cremaschi *et al.* 2006).

Put together, the growing dossier of absolute dates from the two major international teams working in SW Libya make this by far the best documented zone of the Sahara. However, the gaps in knowledge, even here, remain large.

1. Zinkekrā ZIN 001-003 and Tinda (TIN 001)

The excavations carried out by Daniels at Zinkekrā yielded important data on an early Garamantian settlement site (Daniels 1968). The dates presented by van der Veen (1992) have been recalibrated using the latest curve, with some small variance from the reported dates. However, the main conclusion of the earlier report, that the cultivation of emmer wheat, the date palm, the grape vine and other irrigated crops was well established during the first half of the first millennium BC is still strongly supported. There is good correspondence between the AMS dates and the conventional (radiometric) radiocarbon dates. The samples reported here came from two 'early' structures on the summit of Zinkekrā hill (within the overall area of ZIN 001), ZIN 062 and ZIN 071 (samples Zin 6, 5 and 7), a terraced building on the N slope (within the overall area of ZIN 002), ZIN 013 (samples Zin 1-3, 8-10) and a large mudbrick structure at the foot of the S slope (the ZIN 003 area), ZIN 105 (samples Zin 4, 11). The latter was expected to yield a date in the latter centuries BC or early centuries AD, but it seems to have been broadly contemporary with the other structures. What is clear from this is that Garamantian agriculture was a precocious development of the first millennium BC, with the process well underway by *c.*800 BC. The most significant cultural phase at Zinkekrā on this evidence appears to be broadly in the period 1000-400 BC. However, the clustering of the uncalibrated dates suggests that it may have been particularly intensive in the earlier part of this period, with the pattern not really suggestive of an extended occupation over 600 years (though other finds from the excavations do attest some activity in the latter centuries BC).

Another Garamantian escarpment edge settlement where CMD carried out excavations was Tinda, south of Ubārī. An FP revisit to the site identified a deposit in which CMD had reported carbonised grain and extracted

samples for dating (OxA-9573, OxA-9574), which indicates a date in the latter centuries BC. Further samples (Beta-194236, Beta-194237) have since been processed relating to sorghum and pearl millet seeds from the same context. This shows that there was overlap in the dates of occupation of the defensively oriented escarpment edge sites and the Wādī centre 'towns' like Jarma. The excavations at Zinkekrā and Tinda will be more fully discussed in AF 3).

2. Old Jarma GER 001 (standing structures)

A presumed late antique defensive wall overlies levels, dated by two separate samples (OxA-9576, OxA-9820), to the first to third centuries AD. It is certainly mid-late Garamantian and it could be later still. This wall is overlain by the remains of a suspected mosque (OxA-9632) and the date obtained for this structure, in the 11th or 12th century AD, fits very well with the interpretation. Another of the town's main mosques appears to have been constructed somewhat later. The later of two dates from below the foundation of the piers of the southern mosque (OxA-9577, OxA-9578) provide a *terminus post quem* for its construction in the 13th century AD. Two dates (OxA-9933, OxA-9934) relate to the medieval wall circuit. The first, from an organic inclusion in a mudbrick, suggests a date before AD 1000, which, whilst not beyond the bounds of possibility, seems rather early. It may be the result of the incorporation of earlier material in the brick.

Table 40.1: Radiocarbon results from Zinkekrā and Tinda. Five samples are radiometric dates measured at Teledyne Isotopes Ltd (indicated by laboratory codes beginning I- in column 2). Samples with laboratory codes beginning OxA- were processed and measured by Accelerator Mass Spectrometry (AMS) at the Oxford Radiocarbon Accelerator Unit. Samples with laboratory codes beginning Beta- were measured by AMS at Beta Analytic. Uncalibrated (BP) dates are conventional radiocarbon ages (Stuiver and Polach 1977). Calibrated date ranges were obtained by the maximum intercept method (Stuiver and Reimer 1986), using the program OxCal v3.10 (Bronk Ramsey 1995; 1998; 2001) and the INTCAL04 data set (Reimer et al. 2004).

Site code	Lab code	Sample code	Material dated (carbonised unless stated)	[Context]; Phase; description	^{14}C age BP	Calibrated date range (95% confidence)
ZIN 013	I-6323 (1972)	Zin 3	charcoal	Context [155]; hearth	2695±100	1060–590 cal BC
ZIN 071	OxA-3071 (1991)	Zin 7	des. wheat grain, chaff	[2/4]; accumulation within domestic building	2670±70	980–670 cal BC
ZIN 013	OxA-3072 (1991)	Zin 8	date stone	[10]	2620±70	910–540 cal BC
ZIN 337	OxA-3074 (1991)	Zin 10	barley grain	Hearth in domestic structure	2620±70	910–540 cal BC
ZIN 013	I-6321 (1972)	Zin 1	charcoal	[51]; hearth	2595±90	920–410 cal BC
ZIN 062	OxA- 3070 (1991)	Zin 6	des. wheat grain, chaff	[1]; within domestic building	2560±70	840–410 cal BC
ZIN 013	I-6322 (1972)	Zin 2	charcoal	E 'apse' in structure	2560±110	920–390 cal BC
ZIN 071	I-6341 (1972)	Zin 5	charcoal, wood, seeds	Mixed debris	2560±110	920–390 cal BC
ZIN 013	OxA-3073 (1991)	Zin 9	des. date stones	[33]	2530±70	820–400 cal BC
ZIN 105	OxA-3075 (1991)	Zin 11	barley grain	Area W in mudbrick building	2490±70	810–390 cal BC
ZIN 105	I-6324	Zin 4	charcoal	[3/5]; predates earliest phase of mudbrick building	2410±120	810–200 cal BC
TIN 001	Beta - 194236	-	sorghum grain	Area A2; in building by gate	2180±40	390–110 cal BC
TIN 001	Beta - 194237	-	pearl millet grain	Area A2; in building by gate	2130±40	360–40 cal BC
TIN 001	OxA-9573	FP02b	barley grain	Area A2; in building by gate between upper and lower enclosure.	2117±37	350–40 cal BC
TIN 001	OxA-9574	FP02b	barley grain	Area A2; in building by gate	2074±40	200 cal BC–cal AD 20

At any rate it shows that the walls should post-date the 8th century and that there was occupation/activity at Jarma in the period before AD 1000. The second sample relates to a D-shaped tower added at a secondary stage to the wall circuit and suggests a date between the early 16th and late 17th centuries. Material from the *kasba* (OxA-9579, OxA-9769, an organic inclusion in mudbrick and twigs from a tower) gives a consistent date centred on the 14th-15th centuries.

3. Wādī al-Ajāl and wider survey

A large batch of dates relate to defensive structures, mostly the castle-like buildings commonly described as *qsur* and hitherto undated. The most important of these relate to two sites tentatively identified as Garamantian towns, Qaṣr Bin Dughba (GBD 001) in the eastern Wādī al-Ajāl and Qaṣr ash-Sharrāba in the Wādī 'Utba. The AMS dates from the mudbrick outer wall and *qasr* at the former (OxA-9580, OxA-9853) and from one of a series of fortifications within the urban area at the latter (OxA-9631, OxA-9826, OxA-9942) indicate that the fortified elements at this site probably date to the late Garamantian period. At Qaṣr ash-Sharrāba (SCH 020), the series of three dates from different contexts confirms the impression gained from visual inspection of the site that occupation continued into the post-Garamantian period. The latest of the three dates (11th to early 13th century AD) provides possible confirmation that this site is the town known to al-Bakri in the 11th century as Tsāwa (the modern village of that name is now 15km distant with the retreat of the oasis zone). Close to Qaṣr ash-Sharrāba is the site of Qaṣr Māra (MAR 001), a stone-footed mudbrick tower, showing signs of some modification over time. The sample from a mudbrick gives a date in the late 4th-late 6th century AD (OxA-9940).

Several other *qsur* sites provided dates in the late Garamantian period, though in view of the excellent preservation of some of these structures an Islamic date had been anticipated in at least one case. TAG 011 (OxA-9935) is a Garamantian village with a central *qasr*, though the very early date from a mudbrick sample (4th century BC-1st century AD) suggests the possibility of inclusion of earlier organic matter. Qaṣr Būdrinna GBD 002 (OxA-9941), and two other *qsur* in the region of al-Qṣīr (LEK 021) and Būdrinna (GBD 007) (OxA-9823, OxA-9825) have all yielded dates similar to Qaṣr Māra in the 3rd-6th centuries AD. Taken at face value, these add to the impression that the late Garamantian period was characterised by an increasing concern for the construction of defensive structures on their settlement sites. It is also possible that some of these may be later structures, incorporating residual organic material in their mudbrick mix from earlier phases of occupation. Even if that were the case, however, we appear to have

Table 40.2: Radiocarbon results for standing structures sampled at Old Jarma (GER 001). All samples were processed and measured by Accelerator Mass Spectrometry at the Oxford Radiocarbon Accelerator Unit). Uncalibrated (BP) dates are conventional radiocarbon ages (Stuiver and Polach 1977). Calibrated date ranges were obtained by the maximum intercept method (Stuiver and Reimer 1986), using the program OxCal v3.10 (Bronk Ramsey 1995; 1998; 2001) and INTCAL04 data set (Reimer et al. 2004).

Site code	Lab code	Sample code	Material dated (carbonised unless stated)	[Context]; Phase; description	^{14}C age BP	Calibrated date range (95% confidence)
GER 001.5	OxA-9576	FP06	charcoal, not identified	Below tower floor, structure 5	1928±34	cal AD 1–140
GER 001.5	OxA-9820	FP05	charcoal, not identified	Below tower floor, structure 5	1901±38	cal AD 20–230
GER 001.9	OxA-9933	FP01	charcoal, tamarisk needles	Mudbrick inclusion, city wall, structure 9	1135±45	cal AD 770–1020
GER 001.15	OxA-9577	FP07a	date stone	Below primary pier of mosque, structure 15	1062±34	cal AD 890–1030
GER 001.6	OxA-9632	FP25	charcoal, not identified	Mudbrick inclusion, mosque foundations, structure 6	921±36	cal AD 1020–1220
GER 001.15	OxA-9578	FP07b	date stone, not carbonised?	Below primary pier of mosque, structure 15	716±35	cal AD 1250–1390
GER 001.65	OxA-9579	FP08	date stone, not carbonised?	Mudbrick inclusion, *kasba* wall, structure 65	532±32	cal AD 1310–1440
GER 001.65	OxA-9769	FP24	twigs, not identified	*Kasba* tower, upper floor, structure 65; possible refurbishment	492±34	cal AD 1400–1450
GER 001.13	OxA-9934	FP03	charcoal, not identified	Mudbrick inclusion, D-shaped tower, structure 13	270±40	cal AD 1490–1950

Table 40.3. Radiocarbon results from standing structures in Wādī al-Ajāl and beyond. All samples were processed and measured by Accelerator Mass Spectrometry at the Oxford Radiocarbon Accelerator Unit. Uncalibrated (BP) dates are conventional radiocarbon ages (Stuiver and Polach 1977). Calibrated date ranges were obtained by the maximum intercept method (Stuiver and Reimer 1986), using the program OxCal v3.10 (Bronk Ramsey 1995; 1998; 2001) and the INTCAL04 (Reimer et al. 2004) and (in the case of OxA-9581) Kueppers et al. (2004) data sets.

Site code	Lab code	Sample code	Material dated (carbonised unless stated)	[Context]; Phase; description	^{14}C age BP	Calibrated date range (95% confidence)
TAG 011	OxA-9935	FP23	charcoal	Mudbrick inclusion, wall *qasr*	2055±70	350 cal BC–cal AD 80
SCH 020 Qaṣr ash-Sharrāba,	OxA-9631	FP20	charcoal	Mudbrick inclusion, wall *qasr* A	1721±39	cal AD 230–420
GBD 007	OxA-9825	FP18	charcoal	Mudbrick inclusion, wall *qasr*	1684±35	cal AD 250–430
GBD 002	OxA-9941	FP17	charcoal	Mudbrick inclusion, wall *qasr*	1654±35	cal AD 260–530
LEK 021	OxA-9823	FP15	charcoal	Mudbrick inclusion, wall *qasr*	1632±35	cal AD 330–540
GBD 001	OxA-9580	FP09	date stone	Mudbrick inclusion, town wall	1614±35	cal AD 380–550
MAR 001	OxA-9940	FP12	tamarisk needles	Mudbrick inclusion, wall *qasr*	1600±40	cal AD 380–560
GBD 001	OxA-9853	FP10	charcoal & dung	Mudbrick inclusion, wall *qasr*	1560±45	cal AD 400–610
SCH 020	OxA-9942	FP22	charcoal	Mudbrick inclusion, wall *qasr* A	1431±33	cal AD 560–660
TEK 010	OxA-10100	FP11	charcoal	Mudbrick inclusion, outer wall *qasr*	1110±40	cal AD 820–1020
SCH 020	OxA-9826	FP21	charcoal & dung	Build-up within *qasr* (exposed by clandestine digging)	918±32	cal AD 1020–1220
BNH 005	OxA-9824	FP16	preserved timber	Joint end from end wall of *qasr* structure	582±35	cal AD 1290–1430
LEK 018	OxA-9821	FP13	date stone	Mudbrick inclusion, wall *qasr*	404±32	cal AD 1430–1620
ZOU 015	OxA-9822	FP14	preserved twig	From mud packing of stone wall	279±32	cal AD 1510–1800
CHA 031	OxA-9581	FP19	charcoal	Fill of foggara channel	152.4± 0.5pMC	cal AD 1970–71

confirmation of Garamantian period occupation at many of the sites of standing *qsur*.

A further group of dates relates to *qsur* and other structures of unquestionably later date (at least in the final form). LEK 018 (OxA-9821) and TEK 010 (OxA-10100) were selected as examples of *qsur* within settlements with mosques. The result for TEK 010, in the 9th-11th centuries, was earlier than expected and at the very least would seem to indicate some early Islamic period activity at this site, even if the extant *qasr* is perhaps a little later in date. LEK 018 appears to date to the 15th-17th century. Towards the E end of the Wādī there is a group of stone built villages and *qsur* and dates from two of these (ZOU 015, OxA-9822; BNH 005, OxA-9824) confirm the comparatively recent origins of these sites (16th-18th century and 13th-15th century).

The final date (OxA-9581) comes from the infill sequence of one of the irrigation channels in the Wādī al-Ajāl. Unfortunately, the charcoal sample taken appears to have been of relatively recent date, whereas we had hoped for an earlier date from this sample. It is by no means certain that water was still flowing in this feature at so late a date (since the sample was taken below an open shaft the material could have got into the foggara channel fill at a date some time after the feature ceased to function effectively).

4. Old Jarma GER 001 (stratified contexts)

Several samples taken from early levels of the Garamantian city of Old Jarma (OxA-9575; OxA-12707; OxA-12713, OxA-12705) produce a consistent date bracket of 400-200 cal BC. This suggests that the foundation of the city took place around the 4th to 3rd centuries BC.

More detailed comment on the phasing of Old Jarma will be made in AF 4, where the results of the recent excavations will be published. The samples processed

Table 40.4 Radiocarbon results from the G1-G3 excavations in Old Jarma 1997-2001. All samples were processed and measured by Accelerator Mass Spectrometry at the Oxford Radiocarbon Accelerator Unit (OxA-), apart from an unidentified radiometric sample (<CMD>) and two AMS samples processed at Beta Analytic (Beta). Uncalibrated (BP) dates are conventional radiocarbon ages (Stuiver and Polach 1977). Calibrated date ranges were obtained by the maximum intercept method (Stuiver and Reimer 1986), using the program OxCal v3.10 (Bronk Ramsey 1995; 1998; 2001) and the INTCAL04 data set (Reimer et al. 2004).

Site code	Lab code	Sample codes	Material dated (carbonised unless stated)	[Context]; Phase; description	^{14}C age BP	Calibrated date range (95% confidence)
GER 001.4 (G4)	OxA-9575	FP04	date stone	Context [219]; structure 4; earliest level below building 4	2260±34	400 – 200 cal BC
GER 001 (G1)	OxA-12707	FP56 <610>	date stone	[1009]; 10-early; shallow hearth? cut into natural sub-soil	2247±31	400–200 cal BC
GER 001 (G1)	OxA-12713	FP62 <598>	date stone fragments	[955]; 10-late; well-sealed fill of small pit	2246±27	400–200 cal BC
GER 001 (G1)	OxA-12705	FP54 <577>	date stone	[4031]; 8-late; ashy deposit sealed by Temple foundations	2224±28	390–190 cal BC
GER 001 (G1)	OxA-12706	FP55 <599>	date stone	[951]; 9-early; well-sealed fill	2219±29	390–190 cal BC
GER 001 (G1)	Beta-194242	599	pearl millet	[951]; 9-early; fill south of wall [890]	2160±40	370–50 cal BC
GER 001 (G1)	OxA-12712	FP61 <596>	date stone	[962]; 9-early; well-sealed fill of small possible pit	2133±28	350–50 cal BC
GER 001 (G1)	OxA-12708	FP57 <609>	wood charcoal, not identified, outer wood of tree branch	[978]; 8-early; well-sealed charcoal-rich fill over surface in Rm 8.3	2123±28	350–50 cal BC
GER 001 (G1)	OxA-12704	FP53 <597>	date stone	[963]; 7-late; burnt surface in Rm. 7.1; sealed by [925]	1960±30	40 cal BC – cal AD 130
GER 001 (G1)	OxA-10290	FP45 <411>	pearl millet grains (2)	[607]; 5-mid; poorly recorded ashy dump deposits / surfaces	1930±80	110 cal BC – cal AD 250
GER 001 (G1)	Beta-194239	549	pearl millet	[864]; 8-late; courtyard fill – possible tumble	1930±40	40 cal BC – cal AD 140
GER 001 (G1)	OxA-12703	FP52 <592>	date stone	[925]; 7-late; well sealed surface / sub-surface, which seals surface [963]	1856±29	cal AD 70–240
GER 001 (G1)	OxA-12702	FP51 <539>	date stone	[824]; 6-early; Rm 6.2 sub-surface fill, sealed by burning / destruction layer	1817±30	cal AD 120–320
GER 001 (G1)	OxA-10347	FP37 <366>	barley grain(s)	[542]; 5-late; distinct ash / gypsum deposit / room fill on surface in Rm. 5.1	1776±37	cal AD 130–380
GER 001 (G1)	Beta-194240	400	cotton	[661]; 6-late; dark patch in Rm 6.3	1770±40	cal AD 130–300
GER 001 (G1)	OxA-10353	FP47 <414>	date stone	[678]; 6-mid; poorly recorded fill associated with deep pit in Ex. 6.2	1764±37	cal AD 130–390
GER 001 (G1)	OxA-10344	FP34 <128>	barley grain(s)	[468]; 4-early; shallow, small hearth in Ex. 4.2 courtyard fill	1730±37	cal AD 220–410
GER 001 (G1)	OxA-10351	FP41 <400>	barley grain(s)	[661]; 6-late; Rm 6.3 fill	1727±36	cal AD 230–410
GER 001 (G1)	OxA-10352	FP42 <401>	date stone	[611]; 5-early; sealed burnt courtyard fill in Ex. 5.1	1690±38	cal AD 240–430
GER 001 (G1)	OxA-10289	FP43 <405>	barley grain(s)	[665]; 6-early; lower ashy room infill	1670±55	cal AD 240–540
GER 001 (G1)	OxA-10345	FP35 <350>	date stone	[572]; 5-late; burnt floor surface in Ex. 5.1	1661±35	cal AD 250–510

Site code	Lab code	Sample codes	Material dated (carbonised unless stated)	[Context]; Phase; description	^{14}C age BP	Calibrated date range (95% confidence)
GER 001 (G1)	OxA-10343	FP33 <121>	barley grain(s)	[391]; 4-late; Rm 4.1 burnt ashy fill; seals main Phase 4 room surface	1657±39	cal AD 250–540
GER 001 (G1)	OxA-10354	FP48 <419>	date stone	[686]; 6-late; Rm 6.1 surface	1657±37	cal AD 250–530
GER 001 (G1)	Beta-194241	361	cotton	[535]; 5-late; dark grey / blue pit fill in Pit 35	1600±40	cal AD 380–560
GER 001 (G1)	OxA-12701	FP50 <117>	date stone	[402]; 3-mid; Rm 3.3 sub-surface fill	1584±28	cal AD 400–550
GER 001 (G1)	OxA-10346	FP36 <364>	wheat grain	[586]; 3-early; ashy spread (possible surface) in Ex. 3.5	1554±36	cal AD 410–600
GER 001 (G2)	OxA-12710	FP59 <a>	date stone	[2057]; 5-late; well-defined pit visible in section, cut into Temple	1303±26	cal AD 650–780
Ger 001 (G2)	OxA-12711	FP60 <b>	grape pip	[2057]; 5-late; well-defined pit visible in section cut into Temple; sample from clean unexposed fill;	1322±26	cal AD 650–780
GER 001 (G2)	Missing info	<CMD>	[Rad. Date]	G2 section (context unspecified, but probably equivalent to 2057, 655 or 652); 5-late?	1285±95	cal AD 590–980AD
GER 001 (G1)	OxA-10350	FP40 <395>	date stone	[655]; 5-late; pit fill in Ex. 5.3, cut into abandoned Temple; sealed by [652]	1285±36	cal AD 650–810
GER 001 (G1)	OxA-10349	FP39 <389>	date stone	[652]; 5-late; burnt layer of pit fill in Ex. 5.3, cut into abandoned Temple; seals [655]	1269±35	cal AD 660–870
GER 001 (G1)	OxA-12709	FP58	wood charcoal, not identified, from outer rings	[753]; 4-late; ashy pit fill	950±26	cal AD 1020–1160
GER 001 (G1)	OxA-10341	FP30 <106>	Cucurbitaceae seed	[375]; 2-early; fill of Pit 24, in external area Ex. 3.3	812±35	cal AD 1160–1280
GER 001 (G1)	OxA-10288	FP26 <003>	pumpkin/squash seed	[61]; 1-early; Rm 1.2/3 surface; seals [82]	220±55	cal AD 1520–1960
GER 001 (G1)	OxA-10342	FP31 <107>	date stone	[376]; 4-late; fill of Pit 25, in external area Ex. 4.1	204±34	cal AD 1640–1960
GER 001 (G3)	OxA-10348	FP38 <388>	pearl millet grain(s)	[3014]; 1 to 2; sealed ashy deposit / relatively modern pit fill in G3	170±34	cal AD 1650–1960
GER 001 (G1)	OxA-10338	FP27 <008>	maize cob	[82]; 1 to 2; distinct burnt patch (hearth?), beneath patchy Phase 1 room surfaces	161±35	cal AD 1650–1960
GER 001 (G1)	OxA-10340	FP29 <105>	date stone	[358]; 3-late; pit fill, (*tanur* rake-out?) in external area Ex. 3.3	122±35	cal AD 1660–1960
GER 001 (G1)	OxA-10339	FP28 <013>	maize cob	[65]; 1 to 2; burnt fill of pot set beneath Phase 1 surface in Rm 1.2/3	95±37	cal AD 1670–1960
GER 001 (G1)	P11907	FP32 <3>	capsicum seed	[61]		Failed
GER 001 (G1)	P11919	FP44 <409>	sorghum grain	[693]		Failed
GER 001 (G2	P11924	FP49	wheat grain	[3014]		Failed

Table 40.5. Assignment of key AMS dates to stratigraphic phases.

Stratigraphic date (Phase)	Laboratory code	Tentative Dating of Phases
1-early	OxA-10288	16th-early 20th centuries
1 to 2	OxA-10338, OxA-10339, OxA-10348	
2-early	OxA-10341	
3-late	OxA-10340	
3-mid	OxA-12701	
3-early	OxA-10346	
4-late	OxA-10342, OxA-10343, OxA-12709	
4-early	OxA-10344	
5-late	OxA-10345, OxA-10347	7th-9th centuries
5-mid	OxA-10290, OxA-10349, OxA-10350, OxA-12710, OxA-12711	
5-early	OxA-10352	3rd-5th centuries
6-late	OxA-10351, OxA-10354	2nd-6th centuries
6-mid	OxA-10353	
6-early	OxA-10289, OxA-12702	
7-late	OxA-12703, OxA-12704	1st century BC-3rd century AD
8 (G4)	OxA-12705	4th-1st centuries BC
8-early	OxA-12708	
9-early	OxA-12706, OxA-12712	4th-2nd centuries BC
10-late	OxA-12713	4th-3rd centuries BC
10-early	OxA-12707	

have a very broad date spread, from the 4th century BC to the recent past (the site is known to have been finally abandoned in the 1930s) and the general overlap between dates suggests that there were no significant periods of abandonment of the site. There is one radiometric date reported from the Daniels work at Jarma for which full documentation is missing (<CMD> in col. 3 of Table 40.4), evidently a sample taken from the deposits overlying the north-west corner of the Garamantian temple (Mattingly *et al.* 2001, 139). This corresponds with the section recorded in 1997 as 'G2' (Mattingly *et al.* 2000a, 222-23) and the date indicated within the 7th-10th centuries is further confirmation of the continuing activity at the site in the post-Garamantian period. This is equivalent to the Fazzān Project Phase 5-late activity.

The assignment of dates by stratigraphic Phase (the work of David Thomas) produces interesting results (Table 40.4-40.5). A small number of samples evidently represented residual or intrusive material, but the vast majority reflected the chronological sequence of deposits anticipated.

Further analysis of the dates using Bayesian modelling (by John Meadows) has enabled us to establish with greater confidence which of the radiocarbon results provide reliable dates for the main phases of activity on the site, as illustrated in Figure 40.1.

Whereas the results from the earlier phases (10-5) are largely consistent with the stratigraphic sequence, a high proportion of results in phases 4-1 seem incompatible with the samples' stratigraphic positions, and it is difficult to be certain which samples are residual or intrusive (older or younger than the context in which they were found). The large number of short-lived samples dated at Jarma, and the detailed stratigraphic information associated with them, has exposed what must be a widespread problem in dating deeply stratified sites. Nevertheless, some of the samples that may not date their contexts (OxA-10341, OxA-10346, OxA-12701) provide evidence of continuity of occupation at Jarma in periods that are otherwise undated.

Overall, this represents the most complete and best-dated stratigraphic sequence from a Saharan urban centre. Study of the associated botanical remains by Ruth Pelling at UCL is building up a picture of the changing economic base over time and of the timing of first introduction to the central Sahara of a range of crops and plants from Mediterranean or Nilotic and sub-Saharan contexts (Pelling 2005; forthcoming). The dates are providing evidence for the presence of summer crops of Sub-Saharan origin and consequently a move to a two season cropping system, at a much earlier date than previously expected and significantly earlier than the Islamic period

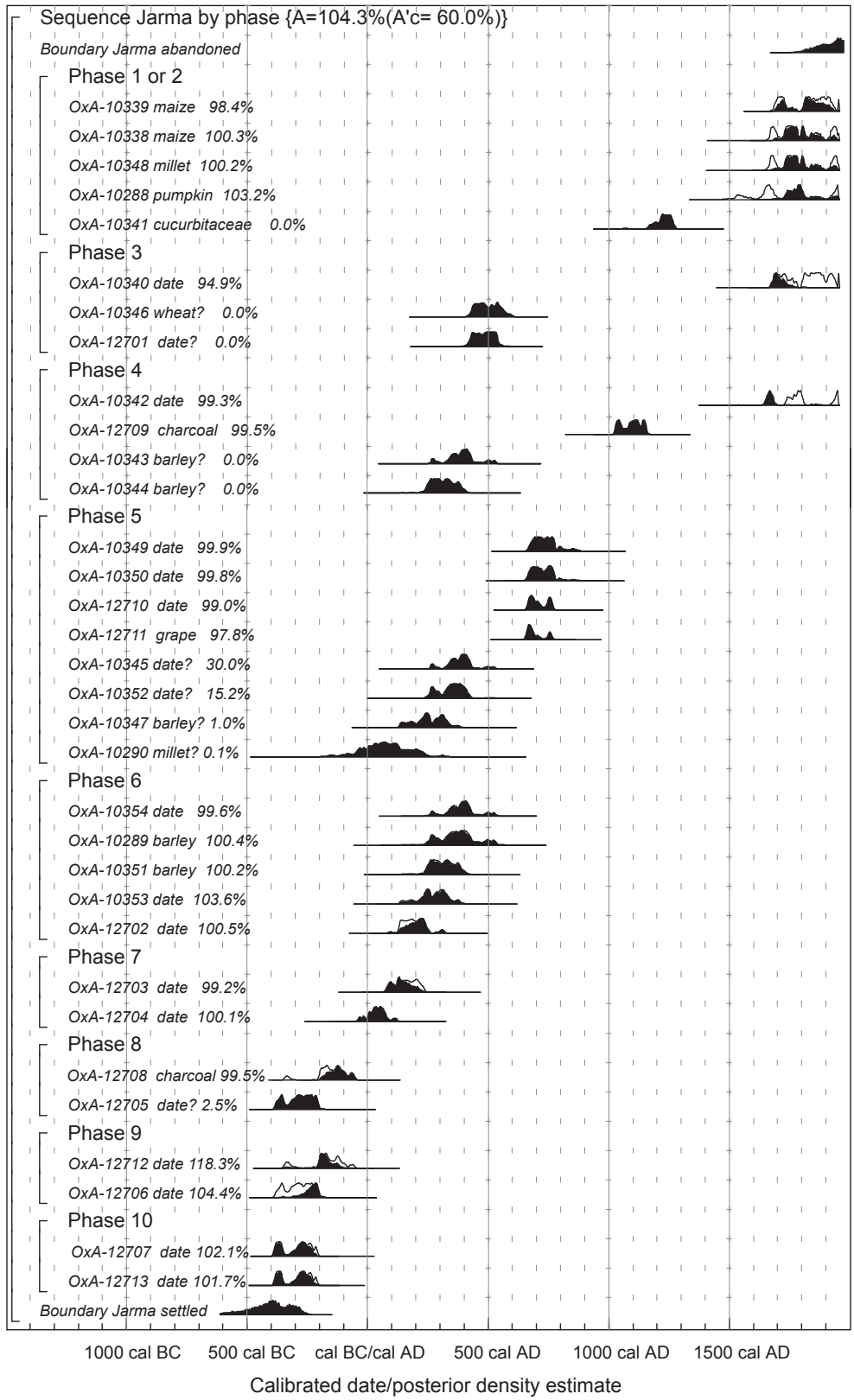


Figure 40.1. (left) Calibrated radiocarbon results from Jarma, arranged by stratigraphic phase within a Bayesian model, implemented in OxCal v3.10 (Bronk Ramsey 1995; 1998; 2001). The model structure, which is exactly defined by the OxCal keywords and square brackets to the left of the figure, incorporates the assumption that samples from stratigraphically earlier phases are progressively older. No assumption is made about the age order of samples within each phase. A satisfactory overall index of agreement (A = 104.3%) is obtained by omitting from the model samples that appear to be residual; these are indicated by a question mark after the laboratory code. This process is necessarily subjective. The best estimate of the date of such samples is given by the probability distribution of the calibrated date (Stuiver and Reimer 1993), shown as a solid distribution. For samples included in the model, two distributions are shown: that in outline is obtained by simple calibration, whereas the solid distribution is a posterior density estimate of the sample's date, based on the model structure and the radiocarbon results included in the model.

(contra Watson 1983). The dates on the sorghum are particularly important in tracing the early history of this crop the origins of which are still unclear (see Pelling forthcoming, for a full discussion). The presence of both pearl millet and sorghum suggest first millennium BC diffusion of arable traditions from the Sahel, while cotton must have spread westwards from Nubia and the Egyptian oases by the later Classical Garamantian period.

Acknowledgements

Funding was sought from a variety of sources to establish the programme of radiocarbon dating of these samples using the most accurate commercially available method. Successful applications to the AHRC, LASMO GML, the Society for Libyan Studies, NERC Research Grants and to the ORADS scheme sponsored by the NERC have enabled a suite of over 75 samples to be processed.

Part 2. The Archaeology of Fazzān: Pottery and other finds

SECTION 41. THE FAZZĀN PROJECT: THE POTTERY TYPE SERIES

By J. N. Dore, A. Leone and J. Hawthorne

PART A. INTRODUCTION

This is the first attempt at constructing a full-scale pottery type series for a Central Saharan region, including both imported wares and locally produced ones in a wide range of fabrics and covering a long time period. To date little has been published in detail from earlier work in the region and nothing that comes close to being a proper type series (Ayoub and Abdel Salem 1968; Ayoub and Kilani 1968a/b; Daniels 1968; Fontana 1995; Pace *et al.* 1951). The recent Italian work in Wādī Tanezzūft (Gatto in Castelli *et al.* 2005, 95-100 and in Liverani 2006) provides some important parallels, but from a region that was on the periphery of the Garamantian state, not at its centre, and thus much less rich in the range of imported wares. The pottery which forms the basis of this type series has two sources:

1. The fieldwork conducted by Daniels (CMD) between 1958 and 1977.
2. The fieldwork conducted by the Fazzān Project (FP) between 1997 and 2001.

The fieldwork conducted by CMD between 1958 and 1977

The type series uses material from the excavations carried out by CMD at Zinkekrā, Tinda, Sāniat Jibrīl and Sāniat bin Huwaydī supplemented by material recovered during survey. The pottery from this work is for the most part in store at Jarma. Small quantities are in store in the UK. Due to deterioration of the original bags and labels, much of the pottery relating to CMD's work stored in Jarma cannot now be precisely linked to context. Most of the work of assembling a type series for the CMD work has therefore come from examination of the archive of drawings and fabric descriptions held in the UK. Additional information on this material has come from a number of sources:

- A small quantity of pottery which is held in the Daniels archive, mostly from the excavations at Zinkekrā.
- Notes, listings and tabulations (most importantly of the GER 011 – Sāniat bin Huwaydī – material) made by Charlotte Tagart in the early 1980s when she was CMD's research assistant.
- Re-examination in Jarma, in 2000, of small quantities of material whose provenance could be established. This included sites in CHA, LEK and ZOU and some of the material from GER 002 (Sāniat Jibrīl) and GER 011 (Sāniat bin Huwaydī).
- Drawing and fabric recording of selected samples of locatable material in Jarma museum, in 2000, 2001 and 2002.

The fieldwork conducted by the Fazzān Project between 1997 and 2001

Between 1997 and 2001 the Fazzān Project carried out systematic field survey in the following areas (see *AF* 1, 107-35 and Gazetteer, this volume, for details):

- GER 002 (Sāniat Jibrīl), 003 (old Jarma Area), 011 (Sāniat bin Huwaydī), 015 (Jarma Area), 016 (Jarma Area), 018 (Jarma Area), 026 (Jarma Area), 027 (Sāniat Sulaymān Krayda).
- ELH (al-Ḥaṭīya) 001, 003, 004, 005, 006, 008.
- CHA (al-Kharaʿiq) 026, 027
- GDB (Qaṣr Bin Dughba) 001
- TWE (Tuwash) 026, 027, 028.

All the representative rim fragments that were recovered have been included in the series, although the number was not large. There was also some reconnaissance survey undertaken at various points up and down the Wādī al-Ajāl and further afield, from which small amounts of pottery were collected.

Finally, the major excavations carried out by the Fazzān project at Jarma (*G1*) have informed the work on this initial type series, though only a limited amount of the pottery recovered from these is included in this provisional classification, as post-excavation work is still continuing.

Table 41.1 below summarises the areas from which pottery was recovered by the two projects.

Table 41.1 Key to sites and survey areas

Code	Area	Project
BBA	Bintbaya	CMD & FP
CHA	al-Kharaʿiq	CMD & FP
CLF	Ikhlif	CMD & FP
EDU	Dahān Ubārī	FP
ELH	al-Ḥaṭīya	CMD & FP
FJJ	al-Fjayj	CMD & FP
FUG	al-Fugar	CMD & FP
MAR	Qaṣr Māra	CMD & FP
GBD	Qaṣr Bin Dughba	CMD & FP
GEL	al-Qalʿat	CMD & FP
GER 001	Jarma (Old Jarma)	CMD & FP
GER 001.3	Old Jarma, building complex 3 (temple) [some pottery from Ayoub's excavations marked as GER B]	CMD

Code	Area	Project
GER 001.4	Old Jarma, Building complex 4	CMD
GER 001.5/6/7	Old Jarma, building complexes 5/6/7 [the material comes from Ayoub's excavations, labelled GER C]	CMD
GER 002	Sāniat Jibrīl, Jarma area	CMD & FP
GER 003	Jarma Area	FP
GER 011	Sāniat bin Huwaydī, Jarma area	CMD & FP
GER 015	Jarma Area	FP
GER 016	Jarma Area	FP
GER 018	Jarma Area	FP
GER 026	Jarma Area	FP
GER 027	Sāniat Sulaymān Krayda, Jarma area	CMD & FP
GRA	Qarāqra	CMD & FP
GRE	al-Qrāya	CMD & FP
GSC	Jarma escarpment, includes some material from GSC 030 originally labelled ROY for 'Royal Cemetery'	CMD & FP
LAR	Lārkū	CMD & FP
LEK	al-Qṣīr	CMD & FP
RUG	ar-Raqayba	CMD & FP
TAG	Tāqallit	CMD & FP
TIN	Tinda	CMD & FP
TWE	Tuwash	CMD & FP
UAT	Wạtwāt	CMD & FP
ZIN	Zinkekrā	CMD & FP
ZOU	al-Zūwīya	CMD & FP
ZUL	Zuwīla	CMD & FP

Collection Methodology: CMD Fieldwork

While not resorting to the extensive gridding and transecting used in sampling today, CMD and his survey teams aimed to be thorough and systematic in their coverage of a site. Thus, while the samples that they collected are not susceptible to the kind of detailed analysis usually undertaken today, they are nevertheless at least reasonably representative of all the ceramic types available on the surface of a given site.

Analysis and Reporting Methodology: CMD Fieldwork

As far as one can judge from records in the field notebooks, all of the preliminary analysis and recording of the material recovered from the excavations and survey was carried out in the field. Miriam Daniels was responsible for almost all of the drawing work and a considerable debt of gratitude is undoubtedly owed to her for ensuring that the archive of drawn material is as comprehensive as it is. Since there were few if any ceramicists specialising at that time in coarseware and amphorae, CMD undertook the cataloguing of the material and the recording of the fabric himself. He himself was not familiar with the common form and fabric types in the fineware and coarseware repertoires, and most of his descriptions are too basic to allow us now to identify common fabric types without seeing the original vessels. It seems probable that the cataloguing of the diagnostic material in the assemblage may not have been comprehensive in all cases. In 2000, a number of groups of material from field-survey sites (mainly sites in al-Khara'iq, al-Qṣīr and al-Zūwīya) was located in the store and washed and re-examined. This exercise revealed a number of vessels which had not previously been recorded, of which three were types which had not hitherto been recorded in the area (two late amphora types and one Tripolitanian Red Slip Ware type).

The Organisation of the Catalogue

Types have been defined principally on shape-related criteria and the assemblage has been divided into four major classes of vessel. The criteria for ordering types within each vessel class differs slightly from class to class. Table 41.2 shows the relationships between class and type and the criteria for ordering types within each class.

Within the entry for each type, details of the occurrence of individual vessels are tabulated. Most vessels are identified by a unique number (the 'CMD' number). A few are referenced otherwise. Site codes correspond to those given in Table 41.1. Descriptions of fabric given in the table under 'Other Information' have been taken from the CMD field notebooks and are given when it has not been possible to make a re-examination of any of the members of the type. Where re-examination and fabric recording has been possible and a generalisation on type-fabrics can be made this is given under a separate heading which precedes the table. At the head of each type entry is placed discussion of the formal criteria which define the type together with evidence for dating.

The organisation of the catalogue of handmade vessels deserves further comment. Since it has not been possible to re-examine more than a very small amount of the handmade assemblage collected by CMD no general series of fabric types can be established for this material. The fabric characterisations and descriptions noted by CMD and given in the tables under 'Other Information' are thus the only fabric information we now have for the assemblage; these descriptions should be treated with extreme caution. Of the two fabrics which he regularly notes, 'Zinkekrā' fabric and 'Berber Red' fabric, only the former can be regarded with any degree of probability

Table 41.2. Organisation of the Type series

Ware	Types	Description
Part B. Fineware	501-534	Types are grouped by ware – e.g. 'Sigillata', 'African Red Slip Ware' – and these are ordered chronologically.
Part C. Amphorae	1-44	Types are ordered chronologically.
Part D. Coarseware	101-244	Types are grouped into shape categories – e.g. 'large bowls', 'casseroles', and broadly chronologically within each shape category.
Part E. Handmade	301-360	Types are grouped in terms of broad chronological periods – e.g. 1st millennium BC, Roman period Garamantian, Medieval etc. This corresponds, generally with the sites from which it was collected, e.g. 1st millennium BC material is, generally speaking, very largely from Zinkekrā, Roman period material is, very largely, from GER 002, etc.
Part F. Mesolithic/ Neolithic handmade		This is essentially an addendum to the catalogue

as being a definable fabric sharing common attributes. The latter, however, cannot be seen as such since CMD's notes make plain that his conception of the basis for its definition as a 'fabric' was far from constant.

A basic description of 'Zinkekrā' fabric is as follows: Hand-made, gritty black with burnished black surfaces; the most obvious inclusions are abundant, rounded grains of quartz, main fraction 0.3-2mm.

During the Fazzān Project handmade pottery of Mesolithic or Neolithic (Pastoral period) date was collected from a number of sites. This material has been kept separate from the type series and is reported on at the end (Part F, below). References to this material have been incoporated into the type series where relevant.

Abbreviations used in the Catalogue

Atlante = Hayes 1985
Conspectus Formarum = Ettlinger *et al.* 1990
DZ [nos] = Daniels 1968 (for cross reference with his publication drawing numbers of selected forms from Zinkekrā)
Hayes = Hayes 1972
OCK = Oxe, Comfort and Kenrick 2000

The Character of the Assemblage

The reader is referred to Tables 41.4-41.7 (Summary of Pottery Types) and Tables 41.8-41.11 (Summary of the Distribution of Pottery Types in the Study Area). Full references to parallels cited for types are given in the respective sections of the catalogue.

The Earliest Pottery

The earliest pottery currently recorded within the study area by either the CMD or the Fazzān projects is of Mesolithic or early Pastoral Neolithic date. It consists of a wall sherd bearing 'dotted wavy-line' rocker decoration from TWE 021 and a wall sherd bearing packed rocker stamping from GRA 002 (see p.428 & 431, catalogue nos 2 and 21). Both of these sites are escarpment settlements, essentially Garamantian hillforts, and these pottery finds point to far earlier occupation of these locations than previously recognised.

Mid-Pastoral pottery has been identified from a number of the Holocene lithic scatters associated with shoreline encampments by the long-vanished palaeolakes in the sand sea (sites such as GER 033).

The Earliest Imported, Wheelmade Pottery

The earliest imported, wheelmade pottery from the study area dates, roughly speaking, to the last three centuries of the 1st millennium BC. The principal types are amphorae and large coarseware bowls usually characterised as late 'Punic' (types 1 – 5.1 and 101-106), Greco-Italic amphorae (type 10) amphorae of form Dressel 1A (types 11 and 12), a Hellenistic white-ground lagynos (type 507) and a series of small bowls in Black Gloss fabric (types 501-506). Our identification of the latter, it has to be said, is somewhat tentative, however; they were not identified as Black Gloss in the field notebooks but have been 'reverse engineered', so to speak, by trawling the drawings for possible black-gloss forms on the assumption that the ware ought to be present if other pottery dating to the last three centuries BC is attested. It is only fair to stress, also, that the actual vessels have not been re-examined.

Be that as it may, however, it is worth noting that a significant number of parallels for these forms (if black-gloss they be) occur in the Bab Bin Gascir necropolis in Tripoli (within the built-up area of modern Tripoli but, interestingly, a good 2.5 km SSE of what is usually assumed to have been the core of the ancient city).

For the late 'Punic' types it is worth noting that a significant proportion come from one site, Tinda. Seventy percent of amphora types 1-5.1 and 68 percent of coarseware types 101-106 come from this site, and, most interestingly, 94 percent of types 101-103 which are the types that might be considered the most 'Punic', that is, those with the best parallels from late Punic deposits, at Sabratha for example (Dore and Keay 1989) and at Carthage (see *Byrsa* I and II).

The Hellenistic white-ground lagynos (type 507) is of considerable interest. Its painted decoration can be very closely paralleled on vessels from the Athenian Agora (see catalogue for references) and the vessel can be dated to between *c.*150 BC and 50 BC. At present, as far as the authors are aware, it is unique in the Wādī al-Ajāl region (no fragments of other vessels have been noted in the assemblage studied for this volume nor among all the other material from the Fazzān seen in the course of

the project). The tomb in which it was found by Ayoub (GER 011, T A2.1) contained much later material suggesting that, at the time of its burial it had the status of an heirloom.

Fineware

The possible black-gloss types and the Hellenistic lagynos have already been mentioned above. In respect of the rest of the fineware assemblage recorded in this volume, there is an undeniable bias created by the large amount of material recovered from the cemetery of GER 011 (Sāniat bin Huwaydī). Seventy-three percent of the fineware included in this volume is from GER 011; of that material 58 percent is Italian Sigillata and of this 65 percent consists of type 515 (*Conspectus Formarum* 3.2). The stamps which appear on this form represent the principal Late Italian producers in the Pisa region and Philip Kenrick is of the opinion that the number of duplicate or near duplicate stamps suggests that most of this material may have arrived in the area as a single consignment on a single occasion.

Accompanying the Italian Sigillata are small amounts of Eastern Sigillata A (types 508-510), South Gaulish Sigillata (type 516) and a single example of a small glazed bowl (type 517) which is likely to be of Italian origin.

The remainder of the fineware series presented in this volume consists of African Red Slip Ware (types 518-530) and its Tripolitanian analogue, Tripolitanian Red Slip Ware (types 531-534), which cover the period from the late 1st century AD to somewhere in the 6th century AD. Whilst it is possible that what is presented here under-represents the occurrence of later fineware in the study area (we have already alluded to this possibility with respect to the material recovered by CMD from survey) we do not believe this to be markedly the case. At present we are not seeing evidence for supply of any great scale, or supply which is necessarily regularised or continuous throughout the period.

Amphorae

Twenty-eight percent of the amphorae recorded in this volume are virtually certain to have originated in Tripolitania (types 15-22). Slightly less certainty, though still a reasonable degree, can be expressed on the Tripolitanian origin of the late 'Punic' types (types 1-5.1), some of the Greco-Italics (type 10) and the mid-Roman type 26. Their inclusion would raise the proportion to around 36 percent. Of the certain candidates 35 percent (mostly the complete or near complete examples) were from the cemetery of Sāniat bin Huwaydī (GER 011).

The standard of manufacture of types 15, 16 and 19 is not particularly high. A number shows some evidence of overfiring, which has caused distortion at the rim. One example (*G1*, 764, from the FP excavations at Jarma, included here for comparison) shows the porous, biscuity texture of marked overfiring, which has resulted in severe distortion. These features are not extreme or consistent enough to indicate manufacture of these vessels in the region, but they do suggest that containers bordering on the sub-standard were being used.

It is usually assumed that types 15-22 carried olive oil though this is far from proven. An examination of the capacities of those vessels complete enough to allow such figures to be estimated (see Table 41.3; see under type 19 for details of how these figures were obtained) shows that generally speaking they are quite small vessels. One might be tempted to suggest that of these the smaller vessels, in particular, held a commodity with a unit-value higher than olive oil; wine would be an obvious candidate though others could be suggested.

Following the mid-Roman period, represented by types 21 – 29, originating largely in Tripolitania with a small number from Tunisia, the number of amphorae types which can be assigned to the late Roman period is small. Late Roman Amphorae 1-4 (types 31-4) are present in small quantities, there is a single example of a Keay type 52 (type 35), and there are a number of types which are unassigned but probably late (types 37-43). As with fineware types 531-4 (Tripolitanian Red Slip), there is a possibility that the quantities of late amphorae have been underestimated since a number of them were only recognised after re-examination of groups in 2000, but probably not by overmuch.

Table 41.3: Estimated Capacities of Amphorae Types 15, 19 and 22

Type	Capacity (L)
15	17.4
15	24.9
15	28.4
15	29.6
19	18
19	19.5
19	20
19	20
19	20.5
19	25.6
19	36
19	41.3
19	42.5
22	15.5
22	22.6

Coarseware

For the coarseware it has to be admitted that there are few well recognised types which are at all common in the assemblage apart from various casserole types. We mention only the distinctive types.

Types 101-106 have already been mentioned in the section on early material (above). They have clear formal parallels with datable material of late 'Punic' date from e.g. Sabratha and Carthage. Type 107 has clear formal parallels with the series of early Roman basins which are well known from a large number of Mediterranean sites (see catalogue for references). Type 108 presents slightly more of a problem with respect to date. The fabric is the same as types 101-3 but some examples (most notably 3691) seem to exhibit formal similarities with the early Roman basin series and for this reason they have been dated slightly later than types 101-3, i.e. 1st century BC – 1st century AD. The concentration on the one site (Tinda) of a number of these early types (101-3 and 108, and see earlier for amphora types 1-5) is worth emphasising again though its implications are difficult to assess. It may simply reflect the amount of time spent by CMD and his team excavating and collecting material at that particular site.

Types 114 and 114.1 are known to have been produced in kilns at Leptiminus in Tunisia (Stirling *et al.* 2000).

Types 143-145 are known at Sabratha and in the pre-desert of Tripolitania, with types 143 and 144 occurring in quantity in the pre-desert. This distribution would suggest manufacture in Tripolitania though possibly at a different centre or centres from those producing standard (if there is such a thing) Tripolitanian Red Slip Ware since (as noted in Dore 1996, 386) the fabric is not particularly similar to TRS.

For the casserole types, the earlier series can be closely paralleled at Sabratha and in the pre-desert area with most of the types common in the period 1st century BC to late 2nd/early 3rd century AD being present. There is a preponderance of types originating from Tripolitania/ Central Tunisia though the classic northern Tunisian types are also present (types 176 and 177). It is interesting to note the occurrence of type 178. Predominantly a Cyrenaican type it occurs in the pre-desert (in the ULVS survey area and at Bū Nijīm) but not (as far as we are aware) at Sabratha, all of which might suggest distibution by inland rather than sea-bourne routes. References to Garamantes in the Bū Nijīm ostraka could be relevant (Marichal 1992, nos 28, 71, 72 and 147).

The early – mid Roman levels at Sāniat Jibrīl (GER 002) are dominated by two types of deep casserole or basin: the first (types 180-6) is relatively undistinguished but the second has walls which are covered with parallel, equally spaced horizontal ridges (type 179). No close parallels for the latter are presently known outside the region. The fabric suggests an origin within the region and it may be that it was produced in the locality.

Type 179.1 is a type common to the pre-desert area in the mid – late Roman period and has affinities with Tripolitanian Red Slip ware.

Among the flagons, jugs and miscellaneous vessels there are several types which are worthy of note. The small jug or mug, type 204, is commonly encountered on coastal sites in Tunisia and Tripolitania, as well as in the pre-desert area, often in association with funerary contexts. The highly distinctive pedestal vase, type 216, if it was produced in the locality as seems likely, would seem indicative of the formal and decorative influence of Roman fineware on local traditions. The late 'Punic' – early Roman flagon series is well represented by types 218-220 all of which have good parallels on the coast at Sabratha and in the pre-desert area.

Handmade

The handmade assemblage covers the greatest span of time, from the early Holocene to the present day.

A general dating horizon is provided by CMD's fieldwork and excavations at Zinkekrā (excluding the cemetery areas on the lower slopes which are of Roman-period date) which provides its associated material with a general date of 1st millennium BC. There are what might be regarded as seven quintessentially Zinkekrā types. They are types 301-4, 307-8 and 310. The interrelated nature of their formal characteristics, the commonality of their fabric, and their abundant occurrence at Zinkekrā combine to suggest strongly that they be associated with the period of Zinkekrā's principal occupation which is dated by C^{14} to the 1st millennium BC.

Type 305 also occurs abundantly on Zinkekrā but in this case there are occurrences on other sites (principally sites located by the Fazzān Project in the inter-dune areas of the Ubārī sand-sea) which suggest that this was a type which originated earlier, conceivably as early as the middle Pastoral period and continued down into the 1st millennium BC. Again, the significance of types that connect the Garamantes with the earlier Pastoral peoples of the region cannot be overstated.

Other types whose association with Zinkekrā places them in the 1st millennium BC are 311, 315-17 and 322-326.

Types 333-340 can be dated by their ocurrence at Sāniat Jibrīl (GER 002) to the period 1st-4th centuries AD.

The doka types 341-343 appear in contexts datable to the 1st century BC or 1st century AD. Thereafter they are common in 2nd- to 4th-century and early medieval levels.

Of the open bowl types with plain rims (345-348) only 1 (346) has any kind of secure date attached to it by virtue of its occurrenc at GER 002.

Type 349-360 can all be dated to the modern period on the basis of the occurrence in 19th-and 20th-century levels in the Fazzān Project's excavations at GER 001.

Table 41.4 Summary of Pottery Types: Fineware

501	Black or Red Gloss Cups of Hellenistic Date	2nd - 1st century BC
502	Black or Red Gloss Cups of Hellenistic Date	2nd - 1st century BC
503	Black or Red Gloss Cups of Hellenistic Date	2nd - 1st century BC
504	Black or Red Gloss Cups of Hellenistic Date	2nd - 1st century BC
505	Black or Red Gloss Cups of Hellenistic Date	2nd - 1st century BC
506	Black or Red Gloss Cups of Hellenistic Date	2nd -1st century BC
507	Hellenistic White-ground Lagynos	2nd - 1st century BC
508	Eastern Sigillata A	Late 1st - Early 2nd century AD
509	Eastern Sigillata A	Late 1st - Early 2nd century AD
510	Eastern Sigillata A	Late 1st - Early 2nd century AD
511	Italian Sigillata	Mid-Late 1st century AD
512	Italian Sigillata	Mid-Late 1st century AD
513	Italian Sigillata	Late 1st century AD
514	Italian Sigillata	Mid-Late 1st century AD
515	Italian Sigillata	Late 1st century AD
516	South Gaulish Sigillata	Late 1st - Early 2nd century AD
517	Glazed Ware (Italian?)	Late 1st century AD?
518	African Red Slip Ware	Late 1st century AD
519	African Red Slip Ware	Late 1st - Early 2nd century AD
520	African Red Slip Ware	Early-Mid 2nd century AD
521	African Red Slip Ware	Late 1st - Early 2nd century AD
522	African Red Slip Ware	Late 1st - Mid 2nd century AD
523	African Red Slip Ware	Late 1st - 2nd century AD
524	African Red Slip Ware	Late 1st - 2nd century AD
525	African Red Slip Ware	Mid 5th century AD
526	African Red Slip Ware	2nd half of 5th century AD
527	African Red Slip Ware	Late 5th - Mid 6th century AD
528	African Red Slip Ware	Late 1st - 2nd century AD
529	African Red Slip Ware	2nd century?
530	African Red Slip Ware	Late 1st - Mid 2nd century AD
531	Tripolitanian Red Slip Ware	Late 3rd - 4th century AD
532	Tripolitanian Red Slip Ware	4th century AD +
533	Tripolitanian Red Slip Ware	5th century AD +
534	Tripolitanian Red Slip Ware	6th century AD +

Table 41.5: Summary of Pottery Types: Amphorae

1	Late 'Punic'	3rd - 1st century BC
2	Late 'Punic'	3rd - 1st century BC
3	Late 'Punic'	3rd - 1st century BC
4	Late 'Punic'	3rd - 1st century BC
5	Late 'Punic'	3rd - 1st century BC
5.1	Late 'Punic'	3rd - 1st century BC
6	Small Amphoroid Jar	1st century BC - 1st century AD?
7	Small Amphoroid Jar	1st century BC - 1st century AD?
8	Small Amphoroid Jar	1st century BC - 1st century AD?
9	Amphoroid Jar	1st century BC - 1st century AD?
10	Greco-Italic	3rd - 2nd century BC
11	Probable Dressel 1A	2nd - 1st century BC
12	Dressel 1A	2nd - 1st century BC
13	Miscellaneous Hellenistic	2nd - 1st century BC?
14	Benghazi Early Roman Amphora Type 6	Late 1st century BC - early 2nd century AD
15	Early Roman Tripolitanian	Late 1st century BC - 1st century AD?
16	Early Roman Tripolitanian	Late 1st century BC - 1st century AD?
17	Early Roman Tripolitanian	Late 1st century BC - 1st century AD?
18	Early Roman Tripolitanian	Late 1st century BC - 1st century AD?
19	Early-Mid Roman Tripolitanian	1st - 2nd century AD
20	Miscellaneous Early-Mid Roman Tripolitanian	1st - 2nd century AD
21	Mid Roman Tripolitanian	2nd - 4th century AD
22	Mid Roman Tripolitanian?	2nd - 4th century AD
23	Mid Roman Tunisian (Keay Type LIX)	2nd - 4th century AD

24	Mid Roman Tunisian (Africano Piccolo)	2nd - 4th century AD
25	Mid Roman Tunisian (Africano Grande)	2nd - 4th century AD
26	Mid Roman Tripolitanian?	2nd - 4th century AD?
27	Mid Roman	2nd - 4th century AD
28	Mid Roman	2nd - 4th century AD
29	Benghazi Mid Roman Amphora 7	3rd - 4th century AD
30	Spatheia	5th - 6th century AD
31	Late Roman Amphora 1	5th - 7th century AD
32	Late Roman Amphora 2	Late 4th - late 6th century AD
33	Late Roman Amphora 3	5th - 6th century AD
34	Late Roman Amphora 4	Late 4th - late 6th century AD
35	Keay Type 52	4th - 6th century AD
36	Late Roman	5th - 6th century AD
37	Unassigned probably late	5th - 7th century AD?
38	Unassigned probably late	5th - 7th century AD?
39	Unassigned probably late	5th - 7th century AD?
40	Unassigned probably late	5th - 7th century AD?
41	Unassigned probably late	5th - 7th century AD?
42	Unassigned probably late	5th - 7th century AD?
43	Unassigned probably late	5th - 7th century AD?
44	Miscellaneous unassigned.	

Table 41.6: Summary of Pottery Types: Coarseware

101	Large bowl - Late 'Punic'	3rd - 1st century BC
102	Large bowl - Late 'Punic'	3rd - 1st century BC
103	Large bowl - Late 'Punic'	3rd - 1st century BC
104	Large bowl - Late 'Punic'	3rd - 1st century BC
105	Large bowl - Late 'Punic'	3rd - 1st century BC
106	Large bowl - Late 'Punic'	3rd - 1st century BC
107	Large bowl - Early Roman	1st century BC - 1st century AD
108	Large bowl - Early Roman?	1st century BC - 1st century AD?
109	Large bowl - Early Roman?	1st century BC - 1st century AD?
110	Small finely made bowl - Early Roman?	1st century BC - 1st century AD?
111	Large bowl with flange rim - Early Roman?	1st century BC - 1st century AD?
112	Large bowl - Mid Roman	2nd - 4th century AD
113	Large bowl - Mid Roman	2nd - 4th century AD
114	Medium bowl - Mid Roman	Late 2nd - 4th century AD
115	Medium bowl - Mid-Late Roman	2nd - 5th century AD
116	Miscellaneous large bowl	?
117	Miscellaneous large bowl	?
118	Finely made medium bowl - Mid Roman	2nd - 3rd century AD
119	Finely made medium bowl - Mid Roman	2nd - 3rd century AD
120	Finely made medium bowl - Mid Roman?	2nd - 3rd century AD?
121	Finely made medium bowl - Mid Roman?	2nd - 3rd century AD?
122	Finely made medium bowl - Mid Roman?	2nd - 3rd century AD?
123	Finely made medium bowl - Mid Roman	2nd - 3rd century AD?
124	Finely made medium bowl - Mid Roman?	2nd - 3rd century AD?
125	Medium bowl (possibly fineware related) - Mid Roman	Late 3rd - 4th century AD?
126	Miscellaneous Large or medium bowl - Mid-Late Roman?	2nd - 5th century AD?
127	Miscellaneous Large or medium bowl - Mid-Late Roman?	2nd - 5th century AD?
128	Miscellaneous Large or medium bowl - Mid-Late Roman?	2nd - 5th century AD?
129	Miscellaneous Large or medium bowl - Mid-Late Roman?	2nd - 5th century AD?
130	Miscellaneous Large or medium bowl - Mid-Late Roman?	2nd - 5th century AD?
131	Miscellaneous Large or medium bowl - Mid-Late Roman?	2nd - 5th century AD?
132	Miscellaneous Large or medium bowl - Mid-Late Roman?	2nd - 5th century AD?
133	Miscellaneous Large or medium bowl - Mid-Late Roman?	2nd - 5th century AD?
134	Miscellaneous Large or medium bowl - Mid-Late Roman?	2nd - 5th century AD?
135	Miscellaneous Large or medium bowl - Mid-Late Roman?	2nd - 5th century AD?
136	Miscellaneous Large or medium bowl - Early-Mid Roman	1st - 4th century AD

137	Medium and small bowls with flange rims - Early-Mid Roman	1st - 2nd century AD
138	Medium and small bowls with flange rims - Early-Mid Roman	1st - 2nd century AD
139	Medium and small bowls with flange rims - Mid Roman	1st - 4th century AD
140	Medium and small bowls with flange rims - Early-Mid Roman	1st - 2nd century AD
141	Medium and small bowls with flange rims - Early-Mid Roman	1st - 2nd century AD
142	Medium and small bowls with flange rims - Early-Mid Roman	1st - 2nd century AD
143	Small carinated bowls with plain rims - Mid Roman	3rd - 4th century AD
144	Small carinated bowls with plain rims - Mid Roman?	3rd - 4th century AD?
145	Small carinated bowls with plain rims - Mid Roman	2nd - 4th century AD
146	Miscellaneous bowl imitating a glass form - Early-Mid Roman	1st - 2nd century AD?
147	Large bowl with plain rim - Mid-Roman	3rd - 4th century AD
148	Large bowl with plain rim	?
149	Medium bowl with plain inturned rim - mid Roman?	2nd - 4th century AD?
150	Medium bowl with plain inturned rim - mid Roman?	2nd - 4th century AD?
151	Medium bowl with plain inturned rim - mid Roman?	2nd - 4th century AD?
156	Medium bowl with plain inturned rim	?
157	Medium bowl with plain rim - mid Roman	2nd - 3rd century AD
158	Medium bowl with plain rim	?
159	Small bowl with plain rim	?
160	Small bowl with plain rim	?
161	Small bowl with plain rim - mid Roman	2nd - 3rd century AD
162	Small bowl with plain rim - mid Roman	3rd - 4th century AD
163	Small bowl with plain rim	?
164	Small bowl with plain rim	?
165	Small bowl or cup with plain rim	?
166	Small bowl with plain rim	?
167	Small bowl or cup with plain rim	?
168	Small bowl or cup with plain rim	?
169	Small bowl or cup with plain rim	?
170	Mortarium - Early Roman	1st century BC - 1st century AD
171	Casserole - Late 'Punic'/ Early Roman	3rd - 1st century BC
171.1	Casserole - Tripolitanian/ Central Tunisian - Early Roman	1st century AD
172	Casserole - Tripolitanian/ Central Tunisian - Early-Mid Roman	1st - 3rd century AD
173	Casserole - Tripolitanian/ Central Tunisian - Mid Roman	2nd - 4th century AD
174	Casserole - Tripolitanian/ Central Tunisian - Mid Roman	2nd - 4th century AD
175	Casserole - Tripolitanian/ Central Tunisian - Mid-Late Roman	3rd - 5th century AD
176	Casserole - North Tunisian - Mid Roman	2nd - 4th century AD
177	Casserole - North Tunisian - Early-Mid Roman	1st - 2nd century AD
178	Casserole - Benghazi Mid Roman Cooking Ware 1	2nd - 5th century AD
179	Casserole - Tripolitanian - Mid-Roman	2nd - 4th century?
179.1	Casserole - Tripolitanian - Mid-Late Roman	4th - 5th century AD (+?)
180	Casserole or basin - Tripolitanian - Early-Mid Roman	1st - 2nd century AD?
181	Casserole or basin - Tripolitanian - Early-Mid Roman	1st - 2nd century AD?
182	Casserole or basin - Tripolitanian - Early-Mid Roman	1st - 2nd century AD?
183	Casserole or basin - Tripolitanian - Early-Mid Roman	1st - 2nd century AD?
184	Casserole or basin - Tripolitanian - Early-Mid Roman	1st - 2nd century AD?
185	Casserole or basin - Tripolitanian - Early-Mid Roman	1st - 2nd century AD?

186	Casserole or basin - Tripolitanian - Early-Mid Roman	1st - 2nd century AD?
187	Casserole or large bowl	?
188	Casserole or large bowl	?
189	Casserole - Mid-Late Roman	5th - 6th century AD?
190	Casserole or large jar	?
191	Casserole or large jar	?
192	Casserole or large jar - Mid Roman?	2nd - 3rd century?
193	Casserole or large jar - Mid Roman?	2nd - 3rd century?
194	Casserole or large jar - Mid Roman?	2nd - 3rd century?
195	Jar	?
196	Jar	?
197	Jar	?
198	Jar	?
199	Jar	?
200	Jar	?
201	Jar	?
202	Jar	?
203	Jar	1st - 2nd century AD
204	Mug - Early-Mid Roman	2nd - 3rd centuries AD
205	Two-handled flask or feeder	?
206	Small stemmed cup	?
207	Unguentarium	?
208	Unguentarium	?
209	Unguentarium	?
210	Unguentarium	?
211	Lid - Early-Mid Roman	2nd - 4th century AD
212	Lid - Early-Mid Roman	2nd - 4th century AD
213	Lid - Early-Mid Roman	2nd - 4th century AD
214	Lid - Early-Mid Roman	2nd - 4th century AD
215	Lid - Early-Mid Roman	2nd - 4th century AD
216	Pedestal vase	1st century AD
217	Base fragments from pedestal vases	1st century AD
218	Early Roman	1st - 3rd century AD
218.1	Amphoroid flagon - Early Roman	1st - 3rd century AD
219	Amphoroid flagon - Early Roman	1st - 3rd century AD
220	Amphoroid flagon - Early Roman	1st - 3rd century AD
221	Flagon - Mid-Late Roman	3rd century AD +
222	Two-handled flagon or flask	1st - 2nd century AD
223	Large flagon	Late?
224	Large flagon	Late?
225	Flagon - mid Roman	2nd - 4th century AD
226	Flagon - mid Roman	2nd - 4th century AD
227	Flagon - mid Roman?	4th century AD ?
228	Flagon - mid Roman?	2nd - 4th century AD?
229	Flagon	?
230	Jug - Carthage Late Roman Jug 1	4th - 6th century AD
231	Flagon or Jug	Late?
232	Jug - Similar to Carthage Late Roman Jug 3	4th - 6th century AD
233	Jug - Carthage Late Roman Jug 3	4th - 6th century AD
234	Flagon	?
235	Flagon	?
236	Flagon	?
237	Flagon	?
238	Flagon	?
239	Flagon or jug	?
240	Flagon or jug - mid Roman	2nd - 4th century AD
241	Flagon	?
242	Flagon - mid Roman	2nd - 4th century
243	Flagon - mid Roman	2nd - 4th century?
244	Flagon or bowl	Islamic

Table 41.7. Summary of Pottery Types: Handmade

301	Deep wide-mouth jar or bowl	1st millennium BC
302	Wide-mouth jar or bowl	1st millennium BC
303	bowl	1st millennium BC
304	Deep wide-mouth jar or bowl	1st millennium BC
305	Deep jar with restricted mouth	1st millennium BC (and earlier?)
306	Deep jar with restricted mouth	1st millennium BC
307	Open bowl or dish	1st millennium BC

308	Open bowl or dish	1st millennium BC
309	Open bowl or dish	1st millennium BC
310	Open bowl or dish	1st millennium BC (and earlier?)
310.1	Small bowl or cup with inturned lip	1st millennium BC (and earlier?)
311	Necked jar	1st millennium BC
312	Deep jar with restricted mouth and provision for lid	?
313	Small jars with bead rims	1st millennium BC
314	Necked wide-mouth bowl or jar	Mid/Late Pastoral
315	Everted rim jar	1st millennium BC (and earlier?)
316	Everted rim jar	1st millennium BC
317	Jar	1st millennium BC
318	Small everted rim jar	1st - 3rd century AD
319	Small everted rim bowl or jar	1st - 3rd century AD
320	Large jar with tall upright rim	Late 1st millennium BC - 3rd century AD
321	Deep jar	Late 1st millennium BC - 3rd century AD
322	Jar	1st millennium BC
323	Jar	1st millennium BC
324	Jar	1st millennium BC
325	Necked jar	1st millennium BC
326	Necked shouldered jar with flange rim	1st millennium BC
327	Small jar	1st millennium BC
328	Miscellaneous deep bowl or jar	?
329	Miscellaneous deep bowl or jar	?
330	Narrow-mouth jar	1st millennium BC
331	Narrow-mouth jar	1st millennium BC
332	Narrow-mouth jar	?
333	Globular jar with tall neck; painted decoration	1st - 4th centuries AD
334	Globular jar with tall neck and flange rim; painted decoration	1st - 4th centuries AD
335	Ovoid jars with vertical lug handles and painted decoration	3rd - 4th centuries AD +
336	Handled cups or incense burners	Medieval?
337	Globular jars with everted rims	1st - 4th century AD
338	Globular jars with everted rims	1st - 4th century AD
339	Globular jars with everted rims	1st - 4th century AD
340	Globular jars with everted rims	1st - 4th century AD
341	Doka	1st millennium BC
342	Doka	1st - 4th century AD
343	Doka	1st - 4th century AD
345	Small hemispherical bowls with plain rim	1st - 4th century AD
346	Small and medium bowls and dishes	1st-4th century AD
347	Small and medium bowls and dishes with developed rims	1st - 4th century AD
348	Miscellaneous vessels	
349	Miscellaneous everted rim jars	Medieval or Modern?
350	Miscellaneous everted rim jars	Medieval or Modern?
351	Jars with tall rims for lid seating	?
352	Miscellaneous deep jars with inturned rims	?
353	Deep jars with inturned rims and lug handles	Modern?
354	Jars with inturned rims and lug handles upstanding above the rim	Modern?
355	Round bottom jar with inturned rims and large handles with peaked lugs	Modern?
356	Handled bowls with ring handles	Modern?
357	Handled bowls with lug handles	Modern?
358	Miscellaneous jars and bowls	
359	Lids	
360	Everted rim jar wqith painted decoration	Post-Medieval

Table 41.8. Distribution of Pottery Types in the Study Area: Fineware

	Type	**CMD no.**	**Context**
FW	501	286	ZIN 291
FW	502	273	ZIN 109 (13)
FW	503	3016	FJJ 002 (9)
FW	504	1213	GSC 008 (1)
FW	505	1966	CHA 001

	Type	CMD no.	Context
FW	505	1967	CHA 001
FW	505	332	FJJ 002 (6)
FW	505	3332	GER 002 (132, s)
FW	505	2630	GER 002 (*6*, 9)
FW	505	1350	GSC 008
FW	505		GSC 016
FW	505	1839	UAT 004 (7)
FW	505	705	ZIN 296
FW	506	3010	FJJ 002 (13)
FW	507	(H42)	GER 011 (T A2.1)
FW	508	4118	GER 011 (T 17AJ)
FW	509	4122	GER 011 (T 17AA)
FW	510		Jarma area
FW	511	4133	GER 011 (T 17AB)
FW	512	4137	GER 011 (T 17AS)
FW	512	4126	GER 011 (T 17AL)
FW	513	4108	GER 011 (T 15F)
FW	513	4100	GER 011 (T 15G)
FW	513	4123	GER 011 (T 17I)
FW	513	4139	GER 011 (T 17J)
FW	514	4149	GER 011 (T 17AF)
FW	515	4106	GER 011 (T 15L)
FW	515	4104	GER 011 (T 15M)
FW	515	4102	GER 011 (T 15H)
FW	515	4105	GER 011 (T 15K)
FW	515	4103	GER 011 (T 15N)
FW	515	4131	GER 011 (T 17AN)
FW	515	4134	GER 011 (T 17AM)
FW	515	4135	GER 011 (T 17S)
FW	515	4115	GER 011 (T 17AW)
FW	515	4112	GER 011 (T 17BF)
FW	515	4120	GER 011 (T 17AC)
FW	515	4129	GER 011 (T 17AT)
FW	515	4127	GER 011 (T 17AQ)
FW	515	4121	GER 011 (T 17AD)
FW	515	4125	GER 011 (T 17BE)
FW	515	4114	GER 011 (T 17K)
FW	515	4116	GER 011 (T 17AU)
FW	515	4119	GER 011 (T 17BG)

	Type	CMD no.	Context
FW	515	4111	GER 011 (T 17AV)
FW	515	4136	GER 011 (T 17X)
FW	515	4130	GER 011 (T 17BA)
FW	515	4117	GER 011 (T 17Y)
FW	515	4124	GER 011 (T 17AZ)
FW	515	4128	GER 011 (T 17AX)
FW	515	4110	GER 011 (T 17AI)
FW	515	4138	GER 011 (T 17AQ)
FW	515	4132	GER 011 (T 17AR)
FW	515	4113	GER 011 (T 17AH)
FW	515	4253	GER 011 (T 42M)
FW	515	4226	GER 011 (T 52K)
FW	515	4225	GER 011 (T 52Q)
FW	515	4229	GER 011 (T 52S)
FW	515	4228	GER 011 (T 52R)
FW	515	4227	GER 011 (T 52J)
FW	515	1417	GER 001.3
FW	516	4220	GER 011 (T 52H)
FW	517	4243	GER 011 (T 51H)
FW	518	(H66)	GER 011 (T A2.1)
FW	519	(H64)	GER 011 (T A2.3)
FW	519	(H67)	GER 011 (T A2.4)
FW	519	4101	GER 011 (T 15O)
FW	519	(H70)	GER 011 (T A2.1)
FW	519	(H68)	GER 011 (T A2.4)
FW	519	(H69)	GER 011 (T A2.4)
FW	519	(H27)	GER 011 (T A2.4)
FW	519	4235	GER 011 (T 51S)
FW	520	(H77)	GER 011 (T A2.3)
FW	521	(H30)	GER 011 (T A2.2)
FW	522	(H32)	GER 011 (T A2.1)
FW	522	(H71)	GER 011 (T A2.4)
FW	523	(H96)	GER 011 (T A2.2)
FW	523		GER 011 (T A2.3)
FW	523	(H33)	GER 011 (T A2.3)
FW	523	(H72)	GER 011 (T A2.3)
FW	523	(H73)	GER 011 (T A2.3)
FW	523	(H75)	GER 011 (T A2.3)
FW	523	(H74)	GER 011 (T A2.4)

	Type	CMD no.	Context
FW	523	(H76)	GER 011 (T A2.4)
FW	524	(H41)	GER 011 (T A2.3)
FW	524	1368	ZIN 119
FW	525		GSC 030 (T 4)
FW	526		ZOU 002
FW	527	(H29)	GSC 030 (T 14)
FW	528	(H12)	Jarma area
FW	528	(H7)	Jarma area
FW	529	4236	GER 011 (T 51T)
FW	530	4289	GER 011 (T 9F)
FW	531	4055	GER 011 (T 14A)
FW	531	2353	GER 002 (*6*, 10)
FW	531	(H24/26)	GSC 030 (T 3)
FW	532	(H93)	GER 011
FW	532		GSC 030 (T 4)
FW	532		LEK 009
FW	533	(H37)	GER 011
FW	533		ZOU 002
FW	534		LAR 003

Table 41.9. Distribution of Pottery Types in the Study Area: Amphorae

	Type	CMD no.	Context
AM	1	3587	TIN 001 (*BE*, G)
AM	2	3647	TIN 001 (*A*, 18, S)
AM	2	3608	TIN 001 (*BE*, B)
AM	3	1071	GSC 008 (1)
AM	4		GER 001 (*G1,* 802D)
AM	4	3595	TIN 001 (*BE*, A)
AM	4	3607	TIN 001 (*BE*, B)
AM	5	3697	TIN 001 (*B*, 17, S)
AM	5	3696	TIN 001 (*B*, 17, S)
AM	5.1	1103	ZIN 220
AM	6	7000	Jarma area
AM	7	7001	Jarma area
AM	8	1010	GSC 002
AM	9		GER 001 (*G1,* 733)
AM	9	4158	GER 011 (T 17G)
AM	9	128	GER 011 (T 17H)
AM	9	4160	GER 011 (T 17F)
AM	10		GER 001 (*G1*, 863)
AM	10		GER 001 (*G1*, 889)
AM	10		GER 001 (*G1*, 950)
AM	10	3381	GER 002 (2 G)
AM	10	1542	GSC 017
AM	11	6041	GER 001.3
AM	11	1846	GER 001.3
AM	11	3701	TIN 001 (*B*, 17, S)
AM	11	3704	TIN 001 (*B*, 21, S)
AM	11	3710	TIN 001 (*B*, 21, S)
AM	11	6035	TIN 001 (*BE*, B)
AM	12	3597	TIN 001 (*BE*, A)
AM	13	2017	GER 001.3
AM	13	3809	RUG 002
AM	14	3634	TIN 001 (*A*2, 4)
AM	15	4148	GER 011 (T 17E)
AM	15	4146	GER 011 (T 17A)
AM	15	4239	GER 011 (T 52A)
AM	15	4251	GER 011 (T 42E)
AM	16	1845	Jarma area
AM	16	2029	GER 001
AM	16		GER 001 (*G1,* 764)
AM	16	1833	GER 001.3
AM	16	2020	GER 001.3
AM	16	2026	GER 001.3
AM	16	1942	GER 001.3
AM	16		GER 001.3
AM	16	1847	GER 001.3
AM	16	1940	GER 001.3
AM	16	3344	GER 011 (*8*, 1)
AM	16	3602	TIN 001 (*BE*)
AM	16	4183	TWE 002 (c)
AM	16	4177	TWE 002 (c)
AM	16	3534	ZOU 002
AM	17		GER 001 (*G1*, 841B)
AM	18	4212	GER 011 (T 51S)
AM	19	4142	GER 011 (T 15A)
AM	19	4164	GER 011 (T 1A)
AM	19	4145	GER 011 (T 17C)

	Type	CMD no.	Context
AM	19	4144	GER 011 (T 15B)
AM	19	4157	GER 011 (T 15C)
AM	19	4161	GER 011 (T 17B)
AM	19	4248	GER 011 (T 42B)
AM	19	4242	GER 011 (T 51V)
AM	19	4241	GER 011 (T 52E)
AM	19	4295	GER 011 (T 53A)
AM	20	871	Jarma area
AM	20	1989	CHA 001
AM	20	1993	CHA 001 (g)
AM	20	2022	GER 001
AM	20	3376	GER 002 (*2*, 4)
AM	20	2021	GER 001.4 (8)
AM	20	3867	GRE 001
AM	21	1991	CHA 001 (g)
AM	21	1992	CHA 001 (g)
AM	21	2028	GER 001
AM	21	1677	GER 001 (5)
AM	21	3343	GER 002 (*8*, 1)
AM	21	3371	GER 002 (*4*, 119)
AM	21	2782	GER 002 (*7*, 64)
AM	21	3377	GER 002 (g)
AM	21	829	GER 001.4 (11)
AM	21	1866	GER 001.4 (99)
AM	21	3612	TIN 001 (*BE*, B)
AM	21	4174	TWE 002 (B)
AM	22	4247	GER 011 (T 42A)
AM	22	4280	GER 011 (T 53H)
AM	23		GER 016 (Grab)
AM	23	2764	LAR 002 (S)
AM	24	1716	GER 001.3
AM	24	2499	GER 002 (*2*, 67)
AM	24	2639	GER 002 (*2*, 67)
AM	24	2771	GER 002 (*4*, 92?)
AM	24	1863	GER 001.4 (99)
AM	24	4281	GER 011 (T 6/A1.4)
AM	25	6022	GER 001.3
AM	25		LEK 006
AM	25	3698	TIN 001

	Type	CMD no.	Context
AM	26	4143	GER 011 (T 17W)
AM	26	4250	GER 011 (T 42D)
AM	26	4237	GER 011 (T 52C)
AM	26	4282	GER 011 (T 9A, 150)
AM	26	4279	GER 011 (T 9B)
AM	27	4147	GER 011 (T 15C)
AM	27	4275	GER 011 (T 53F)
AM	28	4294	GER 011 (T53B)
AM	29		ZOU 002
AM	30	2999	CHA 001
AM	30	1314	GSC 003 (G)
AM	31		CLF 003
AM	31		GBD 001 (NW Quad)
AM	31	3842	GRE 001A
AM	31		LEK 009
AM	31		GSC 030 (T 20/21F)
AM	32		LAR 010
AM	32		ZOU 002
AM	33	3040	CHA 001
AM	33		GSC 001 (C)
AM	34		LEK 009
AM	35		ZOU 002
AM	36	3725	RUG 001 (G)
AM	37	3451	CLF 002
AM	38	3535	ZOU 002 (G)
AM	39	3018	FJJ 006 (1)
AM	40	1941	GER 003 (115)
AM	41		BBA 015
AM	42	1312	GSC 005 (g)
AM	43	156	TAG 001 (G01)
AM	44	6000	Jarma area
AM	44	1919	Jarma area
AM	44	3609	Jarma area
AM	44	6017	GER 016 (909)
AM	44	2336	GER 002 (*2*, 12)
AM	44	2436	GER 002 (*2*, 30)
AM	44	2638	GER 002 (*4*, 30)
AM	44	3679	TIN 001 (*B*, 12, S)
AM	44	3695	TIN 001 (*B*,17, S)

	Type	CMD no.	Context
AM	44	3610	TIN 001 (*BE*, B)
AM	44	1929	CHA 001
AM	44	2999	CHA 001
AM	44	1977	CHA 001
AM	44	1972	CHA 001 (g)
AM	44	1971	CHA 001 (g)
AM	44	1992	CHA 001 (g)
AM	44	3452	CLF 002
AM	44	3845	FJJ 006
AM	44	3082	FJJ 006 (2)
AM	44		TAG 001
AM	44		CHA 001 (grab)
AM	44	1334	GER 002
AM	44	3049	FUG 003
AM	44	3560	GEL 004 (G)
AM	44		GER 002
AM	44	1569	GER 001.1
AM	44	6051	GER 001.3
AM	44	6003	GER 001.3
AM	44	6023	GER 001.3
AM	44	6015	GER 001.3
AM	44	2337	GER 001.3
AM	44	2276	GER 001.3 (*2*, 13)
AM	44	2713	GER 001.3 (*7*, 55)
AM	44	2526	GER 002
AM	44	3102	GER 002
AM	44	3374	GER 002
AM	44	2780	GER 002
AM	44	2705	GER 002
AM	44	2636	GER 002
AM	44	2079	GER 003 (113)
AM	44	1069	GSC 003
AM	44	1346	GSC 006 (g)
AM	44	1013	GSC 001
AM	44	4026	LEK 007 (S)
AM	44	3819	LEK 009
AM	44	3235	RUG 003
AM	44	3694	TIN 001 (*B*)
AM	44	4043	TIN 001 (*B*)
AM	44	3594	TIN 001 (*BE*, A)
AM	44	3596	TIN 001 (*BE*, A)
AM	44	6034	TIN 001 (*BE*, B)
AM	44	3588	TIN 001 (*BE*)
AM	44	4175	TWE 002
AM	44	4174	TWE 002 (B)
AM	44	1602	ZIN 001-003
AM	44	566	ZIN 001-003
AM	44	614	ZIN 109 (12)
AM	44	3541	ZOU 002
AM	44	3541	ZOU 002
AM	44	3533	ZOU 002

Table 41.10. Distribution of Pottery Types in the Study Area: Coarseware

	Type	CMD no.	Context
CW	101	766	GER 001.3
CW	101	770	GER 001.3
CW	101	3663	TIN 001 (*A*)
CW	101	3702	TIN 001 (*B*, 17, s)
CW	101	3708	TIN 001 (*B*, 23, s)
CW	101	3682	TIN 001 (*B*, 12, a)
CW	101	3617	TIN 001 (*BE*)
CW	101	3708	TIN 001 (*BE*)
CW	101	3582	TIN 001 (*BE*)
CW	102	3834	TIN 001 (*A*)
CW	102	3645	TIN 001 (*A*)
CW	102	3636	TIN 001 (*A*)
CW	102	3690	TIN 001 (*B*, 15, G)
CW	102	3621	TIN 001 (*BE*)
CW	103	3021	FJJ 004
CW	103	3675	TIN 001
CW	103	3678	TIN 001 (*B*, 12, s)
CW	103	3677	TIN 001 (*B*, 1, SF)
CW	104	3020	FJJ 002
CW	104		GER 002 (60, s)
CW	104	1420	GER 002 (*D*, g)
CW	104	3238	GRE 001
CW	105	1570	GSC 016
CW	106	1675	GSC 016

	Type	CMD no.	Context
CW	107	1907	FUG 001
CW	108	3019	FJJ 003
CW	108	1324	GSC 008
CW	108	1561	GSC 013
CW	108	3680	TIN 001 (*B*, 12, s)
CW	108	3692	TIN 001 (*B*, 15, s)
CW	108	3691	TIN 001 (*B*, 15, s)
CW	108	3792	TIN 001 (*B*)
CW	108	3705	TIN 001 (*B*)
CW	108	3658	TIN 001 (*B*)
CW	108	3599	TIN 001 (*B*)
CW	108	3679	TIN 001 (*B*, 12, s)
CW	108	3585	TIN 001 (*BE*)
CW	108	3626	TIN 001 (*BE*)
CW	108	3583	TIN 001 (*BE*)
CW	108	3624	TIN 001 (*BE*)
CW	108	3618	TIN 001 (*BE*)
CW	108	1040	ZIN 119
CW	109	504	ZIN 109
CW	110		GER 002 (5)
CW	111	673	TIN 001
CW	112	1372	GSC 008 (1)
CW	112	1546	ZIN 109
CW	113	2300	GER 002 (*6*, 2)
CW	113	2855	GER 002 (*6*, 9)
CW	114	3379	GER 002 (2, g)
CW	114	2625	GER 002 (*7*, 2)
CW	114	3477	ZOU 001 (G)
CW	114	2799	ZOU 002
CW	115		GER 002 (*3*, 5)
CW	116	450	FJJ 004
CW	117	1813	GER 001.4 (150)
CW	118	3278	GER 002 (107, s)
CW	118	3185	GER 002 (46, s)
CW	118	2551	GER 002 (*2*, 56)
CW	118	3324	GER 002 (121, s)
CW	119	2350	GER 002 (*6*, 10)
CW	119	807	GER 001.4 (19)
CW	120	3851	GRE 001 (A)

	Type	CMD no.	Context
CW	121	2009	CHA 001
CW	121	919	GER 002 (g)
CW	122	3155	GER 002 (30, s)
CW	123	2521	GER 002 (*2*, 55)
CW	124	2010	GER 002 (g)
CW	125	3104	GER 002 (3, s)
CW	125	314	GER 002 (*4*, 2/1)
CW	125	2353	GER 002 (*6*, 10)
CW	125	3331	GER 002 (130, s)
CW	126	3198	GER 002 (52, s)
CW	127	917	GER 002 (g)
CW	128	3788	RUG 003
CW	129	2897	GER 002 (4, 48)
CW	130	4206	FUG 009
CW	131	2711	TIN 001
CW	132	3623	TIN 001 (*BE*)
CW	133	4173	TWE 002 (b)
CW	134	1331	GSC 002
CW	135	1934	GER 003 (106)
CW	136	932	GER 002 (*1*, 3)
CW	137	3156	GER 002 (30, s)
CW	137	169	GER 002 (*3*, 3/1)
CW	137	3350	GER 002 (*8*, 1)
CW	137	3172	GER 002 (42)
CW	137	3197	GER 002 (52, s)
CW	137	3271	GER 002 (63, s)
CW	137	2995	GER 002 (g)
CW	137	3531	ZOU 002
CW	138	2808	GER 002 (2, 73)
CW	138	2803	GER 002 (6, 21)
CW	138	3202	GER 002 (53, s)
CW	139	2947	GER 002 (*4*, 65)
CW	139	806	GER 001.4 (19)
CW	140	2900	GER 002 (*2*, 76)
CW	141	949	GER 002 (*3*, 5)
CW	142	2815	GER 002 (*2*, 86)
CW	142	2614	GER 002 (*4*, 92)
CW	143	2211	GER 002 (*7*, 2)
CW	143	3176	GER 002 (44, s)

	Type	CMD no.	Context
CW	144	3241	GER 002 (61, s)
CW	144	2730	GER 002 (g)
CW	145	3199	GER 002 (52, s)
CW	145	3343	GER 002
CW	145	848	GER 001.4 (16)
CW	145	1336	GSC 002
CW	146	133	ZIN 022 (South)
CW	147	3745	RUG 003
CW	148	1961	GER 003 (160)
CW	149	3164	GER 002 (33, s)
CW	149	3579	TIN 001 (*B*)
CW	150	2108	GER 003 (211)
CW	151	2904	CHA 001
CW	151		GER 002 (*7*, 77)
CW	151	1213	GSC 008
CW	156	1562	GSC 015
CW	157	2319	GER 002 (*6*, 2)
CW	158	451	FJJ 004
CW	159	1305	GSC 002
CW	160	1075	GSC 008
CW	161	1983	CHA 001
CW	161	2465	GER 002 (*2*, 33)
CW	162	3070	GER 002
CW	163	1850	GER 001.3 (1)
CW	164	3256	GER 002 (69, s)
CW	165	3686	TIN 001 (*B*)
CW	166	1055	GSC 008
CW	166	3687	TIN 001 (*B*)
CW	167	4184	GSC 020
CW	168	1223	GSC 008
CW	169	2089	GER 001.4 (211)
CW	170	597	ZIN 109 (10)
CW	171	3150	GER 002 (29, s)
CW	171	3207	GER 002 (54, s)
CW	171.1	2084	GER 001.5/6/7
CW	172	3969	GER 001.5/6/7
CW	173	3292	GER 002 (112, s)
CW	173	3103	GER 002 (3, s)
CW	173	3252	GER 002 (63, s)

	Type	CMD no.	Context
CW	173	3194	GER 002 (51, s)
CW	174	1823	GER 001.3 (15)
CW	175	947	GER 002 (*2*, 5)
CW	175	3873	GRE 001
CW	176	2426	GER 002 (*4*, 49)
CW	176	2227	GER 002 (*7*, 2)
CW	177	2824	GER 002 (*6*, 24)
CW	178		GER 002 (*D*, g)
CW	178	3967	GER 001.5/6/7
CW	179	3151	GER 002 (29, s)
CW	179	299	GER 002 (*1*, 4)
CW	179	3190	GER 002 (48, s)
CW	179	3229	GER 002 (59, s)
CW	179	2996	GER 002 (g)
CW	179	912	GER 002 (g)
CW	179	3233	GER 002 (60 s)
CW	179	2852	GER 002 (*6*, 9)
CW	179	1341	GSC 002
CW	179	1164	GSC 003
CW	179.1	422	GER 001 (5)
CW	180	3563	GBD 001
CW	180	2419	GER 002 (*4*, 18)
CW	180	971	GER 002 (*4*, 4/1)
CW	180	2204	GER 002 (*6*, 1)
CW	180	249	GER 002 (4, s)
CW	180	3188	GER 002 (118, s)
CW	180	2732	GER 002 (g)
CW	181	2209	GER 002 (*4*, 10)
CW	181	2658	GER 002 (*6*, 9)
CW	181	2491	GER 002 (*2*, 29)
CW	181	2208	GER 002 (*4*, 10)
CW	182	938	GER 002 (*1*, 2)
CW	182	2657	GER 002 (*6*, 9)
CW	182	2264	GER 002 (*4*, 11)
CW	182	2770	GER 002 (*6*, 24)
CW	182	2633	GER 002 (*6*, 12)
CW	183	2980	GER 002 (*7*, 29)
CW	183	2882	GER 002 (*6*, 24)
CW	183	4199	TWE 015

	Type	CMD no.	Context
CW	184	2802	GER 002 (*6*, 23)
CW	185	3158	GER 002 (30, s)
CW	186	3203	GER 002 (54, s)
CW	187	3162	GER 002 (32, s)
CW	188	2200	GER 002 (*4*, 10)
CW	189	3127	GER 002 (24, s)
CW	190	2280	GER 002 (*6*, 4)
CW	191	928	GER 002 (*1*, 2)
CW	191	965	GER 002 (*4*, 4/1)
CW	192	2823	GER 002 (*4*, 74)
CW	193	297	GER 002 (*4*, 2/2)
CW	193	3235	GER 002 (60, s)
CW	193	2011	GER 002 (g)
CW	194	953	GER 002 (*4*, 4/1)
CW	194	3139	GER 002 (28, s)
CW	194	2032	GER 001.4 (*24*, 1)
CW	195	842	GER 001.4 (8)
CW	196	3611	TIN 001 (*B*)
CW	196	3709	TIN 001 (*B*)
CW	197	3684	TIN 001 (*B*)
CW	198	604	ZIN 109 (11)
CW	199	578	ZIN 109
CW	200	1551	ZIN 109 (G)
CW	201	3817	LEK 009 (G)
CW	202	242	GER 002 (*4*, 5/4)
CW	203	2475	GER 002 (*6*, 14)
CW	204	3041	CHA 001
CW	204		GER 002 (*2*, 2)
CW	204	[H14]	GER 011 (T A3.3)
CW	204	[H188]	GER 011 (T A3.3)
CW	205		GRE 001
CW	206	608	ZIN 109 (4)
CW	207	1079	GSC 008
CW	208	1286	GSC 008
CW	209	4018	LEK 006
CW	210	3611	TIN 001 (*BE*)
CW	211	1729	FJJ 004
CW	211	3013	FJJ 004
CW	212	3685	TIN 001 (*B*)

	Type	CMD no.	Context
CW	213	1896	GER 001.3 (1)
CW	214	1944	GER 003 (152)
CW	215	399	GER 001.4 (12)
CW	216	2001	GER 003 (200)
CW	216	[H51]	GER 011(T A3.1)
CW	216	463	UAT 016
CW	216	1296	ZIN 115 (S)
CW	216	1091	ZIN 220 (g)
CW	216	236	ZIN 001 (s)
CW	217	288	ZIN 296
CW	217	2560	GER 002 (*6*, 18)
CW	218	6004	GER 001.3
CW	218	6040	GER 001.3
CW	218	6029	GER 001.3
CW	218	6037	GER 001.3
CW	218	6033	TIN 001 (*B*, 17, s)
CW	218.1	1192	GSC 004
CW	218.1	4198	TWE 011
CW	218.1	619	ZIN 109 (11)
CW	219	3374	GER 002 (*4*, 120)
CW	219	4197	TWE 011
CW	220	1984	CHA 001
CW	220	1994	CHA 001 (G)
CW	220		FJJ 006
CW	220	3006	FJJ 006
CW	220	1151	GSC 002
CW	220	1159	GSC 002 (G)
CW	220	1313	GSC 005 (g)
CW	220	2232	GER 002
CW	220	677	ZIN 001-003
CW	221	3818	LEK 009 (G)
CW	221	3712	TIN 001 (*B*, 5)
CW	221	3711	TIN 001 (*B*, Y)
CW	221	6031	TIN 001 (*B*, Y)
CW	222	3048	FUG 004
CW	222	[H43]	GER 011 (T A2.1)
CW	222	[H44]	GER 011 (T A2.2)
CW	222	[H21]	GER 011 (T A2,4)
CW	223	3492	ZOU 006

	Type	CMD no.	Context
CW	224	3727	RUG area
CW	225	3354	GER 002 (*8*, 10)
CW	226	3558	GEL 004
CW	226	2526	GER 002 (*4*, 120)
CW	226	3666	TIN 001 (*A*, 103, s)
CW	227	3542	ZOU 002
CW	228	6036	GER 001.3
CW	228		TIN 001 (*A*)
CW	228	3653	TIN 001 (*A*, 23, s)
CW	229	3694	TIN 001 (*B*)
CW	230	3816	LEK 009
CW	230	4198	TWE 011
CW	231	3473	ZOU 001
CW	231	3483	ZOU 002
CW	231	3540	ZOU 002 (G)
CW	232	3507	ZOU 004
CW	233	3491	ZOU 006
CW	234	3538	ZOU 002 (G)
CW	235	3725	RUG 001
CW	236	146	TAG 001
CW	236	3611	TIN 001 (*BE*)
CW	237	3820	LEK 009 (G)
CW	238	3539	ZOU 004
CW	239		GER 011 (T A2.4)
CW	239	429	ZIN 011 (30)
CW	240		GER 011 (T A2.2)
CW	240		GER 011 (T A2.2)
CW	240		GER 011 (T A2.3)
CW	240	572	ZIN 026 (N)
CW	240	279	ZIN 280 (S)
CW	241		GER 011 (T A2.3)
CW	242	3000	FJJ 002
CW	242	[H5]	GER 011 (T A2.1)
CW	242	[H46}	GER 011 (T A2.3)
CW	242	[H45]	GER 011 (T A2.3)
CW	242	4047	Jarma area
CW	242	[H202]	Jarma area/GER 011?
CW	243	3756	RUG area
CW	243	[H101]	GER 011 (T A2.2)
CW	243	[H20]	GER 011 (T A2.4)
CW	243	[H97]	GER 011 (T A2.4)
CW	244	3826	LEK 009

Table 41.11. Distribution of Pottery Types in the Study Area: Handmade

	Type	CMD no.	Context
HM	301		ELH 005
HM	301		ELH 005
HM	301	3650	TIN 001 (*A*)
HM	301	1311	ZIN 001-003
HM	301	58	ZIN 013 (1)
HM	301	1251	ZIN 013 (110)
HM	301	1231	ZIN 013 (110)
HM	301	1133	ZIN 013 (32)
HM	301	260	ZIN 037 (1)
HM	302	3805	CHA 007
HM	302	95	ELH 006
HM	302	1480	ELH 003
HM	302	1470	FJJ 002
HM	302	1453	GER 002
HM	302	1235	GER 002 (4)
HM	302	104	GER 002 (G)
HM	302		GER 016
HM	302		GER 016:
HM	302	441	ZIN 001-003
HM	302	1228	ZIN 013 (108)
HM	302	426	ZIN 007
HM	302	53	ZIN 011 (10)
HM	302	1101	ZIN 013 (107)
HM	302	1242	ZIN 013 (36)
HM	302		ZIN 904
HM	302		ZIN 904
HM	302	1367	ZIN 001
HM	303	3776	CHA 005
HM	303		ELH 006
HM	303	1122	GBD 001
HM	303	57	GER 002 (2)
HM	303	499	ZIN 001-003
HM	303	1468	ZIN 001-003

	Type	CMD no.	Context
HM	303	1237	ZIN 011 (17)
HM	303	1172	ZIN 011 (24)
HM	303	116	ZIN 013 (u/s)
HM	304	3787	CHA 005
HM	304	3649	TIN 001
HM	304	55	ZIN 001-003
HM	304	4	ZIN 013
HM	304	1494	ZIN 060
HM	304	1243	ZIN 013 (109)
HM	304	1490	ZIN 060 (S0)
HM	305	1288	
HM	305	3416	CLF 008 (53, 3)
HM	305		ELH 005
HM	305	1469	GER 002 (5)
HM	305		GER 033
HM	305	2762	LAR 001
HM	305	3661	TIN 001 (*A*)
HM	305	3659	TIN 001 (*A*)
HM	305	472	TIN 001 (G)
HM	305	472	TWE 004?
HM	305	1486	ZIN 001-003
HM	305	223	ZIN 001-003
HM	305		ZIN 001-003
HM	305	136	ZIN 047 (S)
HM	305	1289	ZIN 070 (1)
HM	305	1462	ZIN 060 (5)
HM	305	99	ZIN 011 (20)
HM	305	67	ZIN 011 (26)
HM	305	1089	ZIN 013 (105)
HM	305	1185	ZIN 013 (35)
HM	305	1356	ZIN 013 (42)
HM	305	1211	ZIN 013 (108)
HM	305	26	ZIN 013 (4)
HM	305	1564	ZIN 101 (E)
HM	305	225	ZIN 001 (S)
HM	305	217	ZIN 001 (S)
HM	305	1062	ZIN 001 (S)
HM	305	59	ZOU 006
HM	306	1458	ZIN 051 (1)

	Type	CMD no.	Context
HM	306	1490	ZIN 060 (S0)
HM	307	3775	CHA 005
HM	307	3779	CHA 005
HM	307	3396	CLF 004
HM	307	1464	ELH 004
HM	307	31	GER 002 (G)
HM	307	1281	GER 002 (*3*, 2)
HM	308	3781	CHA 005
HM	308	1497	ELH 003
HM	308	3815	RUG 006
HM	308	1478	ZIN 060
HM	308	439	ZIN 001-003
HM	308	1077	ZIN 011
HM	308	1439	ZIN 001 (S)
HM	309	32	TAG 001
HM	310		EDU 018
HM	310	496	GER 001 (19)
HM	310	1428	ZIN 001-003
HM	310	1355	ZIN 013 (1)
HM	310	1047	ZIN 001 (S)
HM	310.1	3784	CHA 001
HM	310.1		MAR 009
HM	310.1	3669	TIN 001 (*A*)
HM	310.1	1454	ZIN 075
HM	311	4031	CLF 002
HM	311		ELH 006
HM	311	3707	TIN 001
HM	311	3635	TIN 001 (A)
HM	311	113	ZIN 011 (17)
HM	311	96	ZIN 011(20)
HM	311	1194	ZIN 013 (1)
HM	311	1081	ZIN 013(111)
HM	311	1144	ZIN 013 (32)
HM	311	1191	ZIN 013 (107)
HM	311	1246	ZIN 013 (109)
HM	311	1178	ZIN 013 (110)
HM	311	1245	ZIN 013 (111)
HM	311	1422	ZIN 013 (111)
HM	311	440	ZIN 034 (3)

	Type	CMD no.	Context
HM	311	485	ZIN 119
HM	312	1058	GSC 008
HM	313	1351	ZIN 013 (56)
HM	313	1227	ZIN 017 (38)
HM	314	1411	ZIN 013(39)
HM	315		ELH 006
HM	315		GRA 002
HM	315	1369	ZIN 011 (surface)
HM	315	1418	ZIN 013 (115)
HM	315	1319	ZIN 013 (29)
HM	315	1224	ZIN 013 (50)
HM	315	487	ZIN 119
HM	315	2	ZIN 013 (14)
HM	316		TWE 021
HM	316	3008	FJJ 006
HM	316	3014	FJJ 006
HM	317	4201	TWE 011
HM	317		ZIN 001-003
HM	317	1422	ZIN 001-003
HM	317	24	ZIN 001-003
HM	317	103	ZIN 001-003
HM	317	82	ZIN 001-003
HM	317		ZIN 118
HM	317	259	ZIN 001-003
HM	317	108	ZIN 013 (1)
HM	317	1097	ZIN 013 (107)
HM	318	2865	GER 002 (*4*, 74)
HM	318	2304	GER 002 (*6*, 2)
HM	318	2675	GER 002 (*6* 21)
HM	318	2781	GER 002 (*6*, 23)
HM	319	2689	GER 002 (*6*, 21)
HM	319	2710	GER 002 (*6*, 21)
HM	320	3418	CLF 002
HM	320	3442	CLF 002
HM	320	2886	GER 002 (*4*, 110)
HM	320	3641	TIN (*A*, 12, 4)
HM	320	500	ZIN 109 (5)
HM	320	1254	ZIN 218 (3)
HM	321		CHA 001 (2)

	Type	CMD no.	Context
HM	321		GER 002
HM	321		GER 016
HM	321	497	ZIN 101 (2)
HM	322	1239	ZIN 218 (2)
HM	322	27	ZIN 011 (8)
HM	322	1105	ZIN 013 (103)
HM	322	1210	ZIN 013 (11)
HM	322	1186	ZIN 013 (108)
HM	322	1195	ZIN 013 (109)
HM	322	1197	ZIN 013 (111)
HM	322	431	ZIN 034 (4)
HM	323		CHA 026/027
HM	323		ELH 006
HM	323	1030	ZIN 013, (39)
HM	323	1093	ZIN 013 (107)
HM	323	1066	ZIN 013 (48)
HM	323	1429	ZIN 013 (50)
HM	324	1988	CHA 001
HM	324	3630	TIN 001
HM	324	1471	ZIN 060
HM	324	1466	ZIN 060 (4)
HM	324	61	ZIN 011 (10)
HM	324	1098	ZIN 013 (32)
HM	324	106	ZIN 013 (1)
HM	324	1238	ZIN 013 (108)
HM	324	1442	ZIN 013 (39)
HM	325	70	ZIN 011 (20)
HM	325	1104	ZIN 013 (7)
HM	325	1026	ZIN 013 (53)
HM	326	1092	ZIN 013 (103)
HM	326	434	ZIN 034 (4)
HM	326	1447	ZIN 060 (3)
HM	326	489	ZIN 119
HM	327	1118	ZIN 013 (106)
HM	327	1146	ZIN 013 (109)
HM	328	1260	GSC 003
HM	329	2646	GER 002 (*4*, 64)
HM	330		ELH 006 (2)
HM	330	1088	ZIN 013 (107)

	Type	CMD no.	Context
HM	331	3668	TIN 001
HM	331	4195	TWE 001? (5G)
HM	332	3563	GBD 001
HM	332	1443	ZIN 013 (5)
HM	333	1982	CHA 001
HM	333	1345	GSC 002
HM	333	1342	GSC 002
HM	333	1344	GSC 002
HM	333	1078	GSC 007
HM	333	1162	GSC 007
HM	333	668	ZIN 280
HM	333	559	ZIN 023 (5)
HM	333	563	ZIN 024
HM	333	505	ZIN 109
HM	333	560	ZIN 235
HM	333	655	ZIN 280
HM	333	666	ZIN 280
HM	333	656	ZIN 280 (G)
HM	333	674	ZIN 281
HM	333	1102	ZIN 330 (A)
HM	334	1970	CHA 001
HM	334	1995	CHA 001
HM	334	1964	CHA 001
HM	334	2030	CHA 001
HM	334	3448	CLF 008
HM	335	3422	CLF 002
HM	335	2416	GER 002 (*4*, 26)
HM	335	2278	GER 002 (*4*, 26)
HM	335	2859	GER 002 (*7*, 70)
HM	335	3856	GRE 001
HM	335	3836	GRE 001
HM	335	3847	GRE 001
HM	335	3857	GRE 001
HM	335	4020	LEK 007
HM	335	3741	RUG 003
HM	335	3754	RUG 003
HM	335		RUG 023
HM	335	3528	ZOU 002
HM	335	3486	ZOU 006

	Type	CMD no.	Context
HM	335	3458	ZOU 006
HM	335	3488	ZOU 006
HM	335	3520	ZOU 009
HM	335	3718	ZOU 011
HM	336	3518	Jarma area
HM	336	3439	Jarma area
HM	337	1974	CHA 001
HM	337		CHA 001
HM	337		ELH 005
HM	337		ELH 006
HM	337		ELH 006
HM	337		ELH 008
HM	337	3012	FJJ 006
HM	337	935	GER 002 (*1*, 4)
HM	337	931	GER 002 (*1*, 3)
HM	337	927	GER 002 (*1*, 3)
HM	337	2910	GER 002 (*2*, 76)
HM	337	2706	GER 002 (*2*, 76)
HM	337	2676	GER 002 (*2*, 76)
HM	337	2835	GER 002 (*2*, 27)
HM	337	2553	GER 002 (*4*, 88)
HM	337	966	GER 002 (*4*, 2/6)
HM	337	2895	GER 002 (*4*, 92)
HM	337	2831	GER 002 (*6*, 24)
HM	337	2461	GER 002 (*6*, 14)
HM	337	2488	GER 002 (*6*, 14)
HM	337	2598	GER 002 (*6*, 19)
HM	337	2887	GER 002 (*6*, 21)
HM	337	2784	GER 002 (*6*, 24)
HM	337	2806	GER 002 (*6*, 24)
HM	337	2355	GER 002 (*7*, 1)
HM	337	2772	GER 002 (*7*, 24)
HM	337	937	GER 002 (*1*, 4)
HM	337		GER 027
HM	337		GSC 006
HM	337		LEK 017
HM	337		RUG 021
HM	337	3654	TIN 001
HM	337	1432	ZIN 013 (39)

	Type	CMD no.	Context
HM	338		CHA 001
HM	338		GER 002
HM	338	933	GER 002 (*1*, 1)
HM	338	922	GER 002 (*1*, 4)
HM	338	930	GER 002 (*1*, 3)
HM	338	921	GER 002 (*1*, 4)
HM	338	2608	GER 002 (*2*, 67)
HM	338	2853	GER 002 (*2*, 67)
HM	338	2911	GER 002 (*4*, 101)
HM	338	2674	GER 002 (*6*, 21)
HM	338	2394	GER 002 (*6*, 10)
HM	338	2704	GER 002 (*6*, 19)
HM	338	2695	GER 002 (*6*, 21)
HM	338	2840	GER 002 (*6*, 24)
HM	338	2822	GER 002 (*6*, 24)
HM	338	2623	GER 002 (*6*, 9)
HM	338		GER 016
HM	338		RUG 022 (2)
HM	339		CHA 026
HM	339	2570	GER 002 (*2*, 67)
HM	339	2690	GER 002 (*2*, 77)
HM	339	2244	GER 002 (*2*, 13)
HM	339	2522	GER 002 (*2*, 57)
HM	339	2493	GER 002 (*2*, 57)
HM	339	2520	GER 002 (*2*, 57)
HM	339	2312	GER 002 (*4*, 26)
HM	339		GER 004
HM	339		GER 004
HM	340	2269	GER 002 (*1*, 1)
HM	340	2541	GER 002 (*2*, 57)
HM	340	2845	GER 002 (*6*, 24)
HM	340	2572	GER 002 (*6*, 9)
HM	340	3642	TWE area
HM	341	3638	TIN 001
HM	341	3655	TIN 001
HM	341	3673	TIN 001
HM	341	1099	ZIN 013
HM	342	2347	GER 002 (*7*, 2)
HM	342	2286	GER 002 (*7*, 2)

	Type	CMD no.	Context
HM	342	2399	GER 002 (*4*, 26)
HM	342	3700	TIN 001
HM	343		ELH 006
HM	343		ELH 005
HM	343	2531	GER 002 (*2*, 28)
HM	343	2313	GER 002 (*2*, 3)
HM	343	2438	GER 002 (*2*, 33)
HM	343	2562	GER 002 (*2*, 56)
HM	343	2235	GER 002 (*4*, 26)
HM	343	2311	GER 002 (*4*, 13)
HM	343	2266	GER 002 (*4*, 13)
HM	343	2386	GER 002 (4, 19)
HM	343	2348	GER 002 (4, 26)
HM	343	2400	GER 002 (*4*, 26)
HM	343		GER 016
HM	345		GBD 002
HM	345	2505	GER 002 (*2*, 38)
HM	345	2809	GER 002 (*4*, 100)
HM	345	2411	GER 002 (*4*, 26)
HM	345	2317	GER 002 (*6*, 2)
HM	345		GER 026
HM	345		ZOU 001
HM	345		ZOU 001
HM	346		BBA 015
HM	346		CHA 001
HM	346		CHA 001
HM	346	3017	FJJ 006
HM	346		GBD 021
HM	346		GEL 027
HM	346	2248	GER 002 (*2*, 11)
HM	346	2468	GER 002 (*2*, 33)
HM	346	2557	GER 002 (*4*, 65)
HM	346	2240	GER 002 (4, 26)
HM	346	2637	GER 002 (*4*, 30)
HM	346	2848	GER 002 (*4*, 24)
HM	346	2670	GER 002 (*6*, 9)
HM	346	2377	GER 002 (*7*, 1)
HM	346	2388	GER 002 (*7*, 2)
HM	347	3433	CLF 008

	Type	CMD no.	Context
HM	347	2851	GER 002 (*4*, 24)
HM	347	979	GER 002 (*4*, 1, 4-5)
HM	347	2358	GER 002 (*4*, 26)
HM	347	2662	GER 002 (*6*, 9)
HM	347		GER 004
HM	347	3848	GRE 001
HM	347		RUG 022
HM	347		ZOU 001
HM	347		ZUL 010
HM	348	331	FJJ 002
HM	348	493	ZIN 001-003
HM	348	3714	ZOU area
HM	349	3421	CLF 002
HM	349		FJJ 006
HM	349	3999	LEK 001
HM	349	3748	RUG 003
HM	349	3651	TIN 001
HM	350	3446	CLF 002
HM	350	3420	CLF 002
HM	350	3056	FUG 003
HM	350	3858	GRE 001 (176)
HM	351	3444	CLF 002
HM	351	3498	ZOU area
HM	351	3480	ZOU area
HM	352	3761	
HM	352	3384	CLF 002
HM	352		ELH 006
HM	352	1901	FUG 001
HM	352	4205	FUG 009
HM	352		GER 003
HM	352	4002	LEK 001
HM	352	3591	TIN 001
HM	352	1276	ZIN 087
HM	353	3387	CLF 002
HM	353	3389	CLF 002

	Type	CMD no.	Context
HM	353	1000	TWE 001
HM	354	3431	CLF 002
HM	354	4001	LEK 010
HM	355		GER 002
HM	355		GER 015
HM	355		GER 027
HM	355	3790	TAG 020
HM	355	427	ZIN 109 (12)
HM	355	671	ZIN 280 (1)
HM	356	3569	GBD 002 (26)
HM	356	3553	GEL 002
HM	356	3551	GEL 002
HM	356	4006	LEK 001
HM	357	3415	CLF 002
HM	357	3886	CLF 002
HM	357	3552	GEL 002
HM	358	3804	CHA 007 (S)
HM	358	3423	CLF 002
HM	358	3438	CLF 002
HM	358	3388	CLF 002
HM	358	3555	GEL 003
HM	358	1338	GSC 002
HM	358	3824	LEK 009
HM	358	3731	RUG 001
HM	358	3722	RUG 001 (G)
HM	358	432	ZIN 001-003
HM	358	495	ZIN 105 (5)
HM	359		CHA 031
HM	359		ELH 005
HM	359		ELH 006
HM	359	4204	FUG 009
HM	359	3558	GEL 004
HM	359	1101	ZIN 001-003
HM	360	1022	GSC 010 (SP)

PART B. FINEWARE

Black or Red Gloss of 'Hellenistic' Date

The following should be regarded as possible candidates for fineware status. They were not so identified in the original field notebooks but since they were all recovered from the surface they could well have lost most if not all of their slip coating. Essentially, attribution has been made solely on the basis of shape. It has not been possible to re-examine any of the vessels.

Type 501

CMD No.	Context	Other information
286	ZIN 291	No fabric description

See Morel 1981, series 2900, particularly 2951-2955 the majority of which Morel dates to the 2nd century BC. No. 2953a1 is from Tripoli (the Bab Bin Gascir necropolis, tomb 1).

Type 502

CMD No.	Context	Other information
273 [DZ 401]	ZIN 109 (13)	Hard red, self-coloured.

See Morel 1981, 2974a1, dated to the mid 2nd century BC.

Type 503

CMD No.	Context	Other information
3016	FJJ 002 (9)	No fabric description. Small imported bowl

Type 504

CMD No.	Context	Other information
1213	GSC 008 (1)	Liver red fabric with grey outside and in (traces of brown outside); hard, almost metallic

See Morel 1981, Series 2825. No. 2825d 1 is from Tripoli (the Bab Bin Gascir necropolis, tomb 3).

Type 505

CMD No.	Context	Other information
1839	UAT 004 (7)	No fabric description
332	FJJ 002 (6)	No fabric description. A little imported bowl
705	ZIN 296	No fabric description
1350	GSC 008 (1)	No fabric description
2630	GER 002 (6, 9)	Fine red with black slip
3332	GER 002 (132, s)	Fine black, slipped
1966/ 1967	CHA 001	No fabric description
	GSC 016	No fabric description

See Morel 1981, Series 2787. Morel defines two production centres for the series, central Italy and Campania, dating the commencement of the former to the early 3rd century BC and that of the latter to about a century later. Our vessel is closer in form to the Campanian production (2787 f-h). No. 2787h is from Tripoli (Bab Bin Gascir Necropolis, tomb 3).

Type 506

CMD No.	Context	Other information
3010	FJJ 002 (13)	No fabric description.

Small imported bowl. There seem to be no close parallels in Morel.

Hellenistic White-ground Lagynos

Type 507

CMD No.	Context	Other information
[H 42]	GER 011 (T A2.1)	Fine, pale, pinkish buff fabric, white slip ground. Seen in Jarma Museum.

The handle, the rim and much of the neck are missing. Decoration in dark brown paint: broad band at base of neck; broad band at angle of shoulder with two narrower bands above and one below; narrow band at the top of the footring; on shoulder, four wreaths with bows, dolphin, large wading bird, syrinx. Close parallels for this vessel are known from the Athenian Agora (Rotroff 1997, 225 ff.). The syrinx and the square-ended bow on catalogue nos. 1504 and 1521 are sufficiently close to those on our example as to suggest that the same hand painted them. At Athens these white-ground lagunoi were being imported in the first quarter of the 2nd century BC but were most popular between 150 and 50 BC (Rotroff 1997, 226-7). They occur all over the Mediterranean and originate from a number of sources though, at present none of these can be definitively identified.

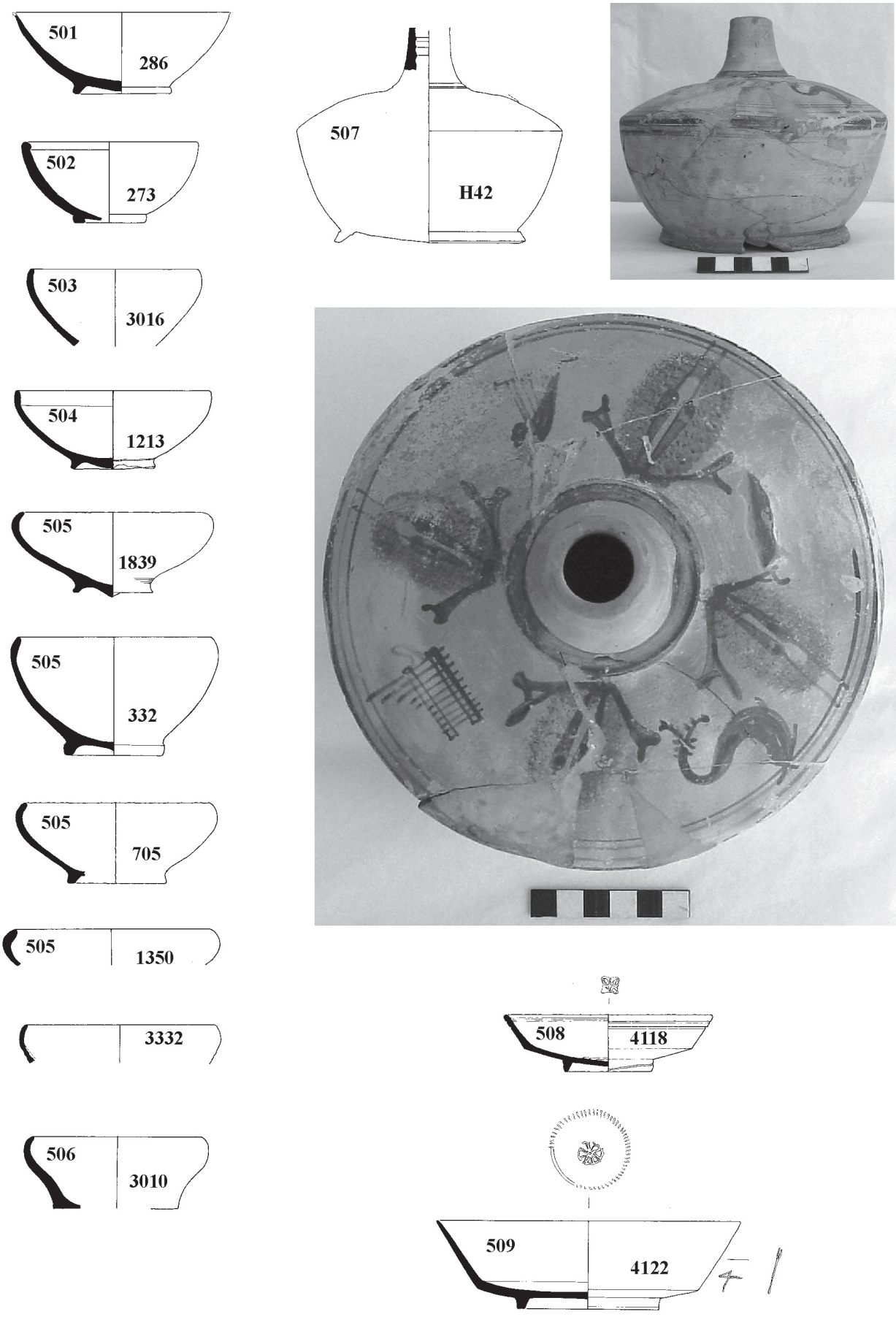


Figure 41.1. Fineware types 501-509. Drawings & upper photograph 1:4. Lower photograph 1:2 approx.

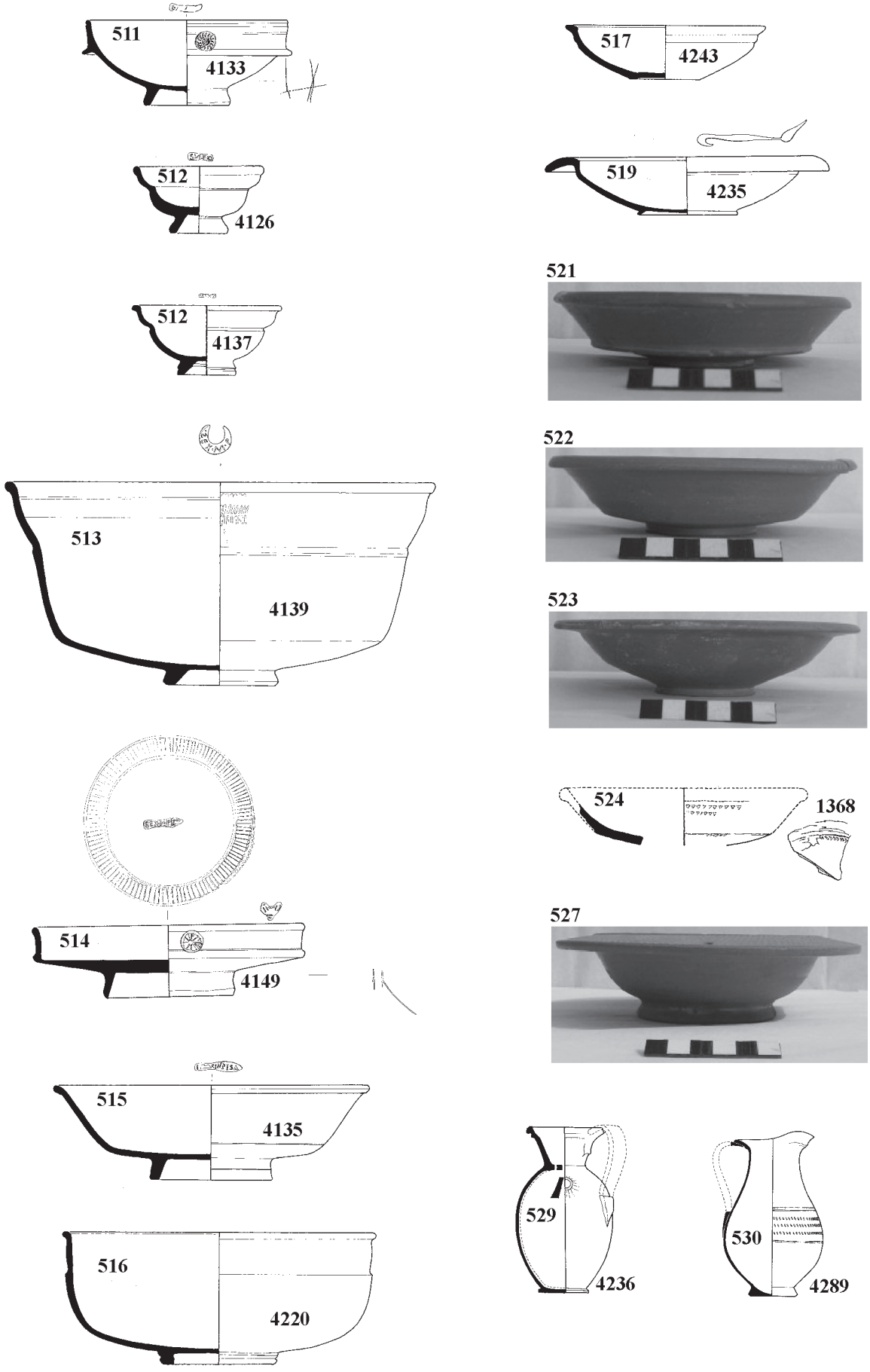


Figure 41.2. Fineware types 511-530. Drawings 1:4. Photographs 1:4 approx.

Eastern Sigillata A

Type 508

CMD No.	Context	Other information
4118	GER 011 (T 17AJ)	Rosette stamp

Atlante form 40A. *c.*AD 80-120. Hayes lists two other examples of this form from Jarma, both unstamped. The first (H80) is from another tomb at GER 011 (T 3C) (*Atlante,* 'Prototipi', A and Tav. V, no. 16); the findspot of the second (H94) (*Atlante,* 'altri esemplari') is unclear. AD 80-120.

Type 509

CMD No.	Context	Other information
4122	GER 011 (T 17AA)	Rosette stamp

Atlante form 40C. *c.*AD 80-120.

Type 510

CMD No.	Context	Other information
-	Jarma area	

An example of *Atlante* form 51 is also known from Jarma, though its precise findspot is unclear (*Atlante*, p. 37, under 'altri esemplari', and *Tav.* VI, no. 209). AD 70-120.

Italian Sigillata

Information on the stamps has been provided by Philip Kenrick.

References to potters from OCK are as follows: the number in front of the decimal point signifies the potter in the OCK listing; the number after the decimal point represents an individual die wherever possible. Where no type is indicated, the example is either too fragmentary to suggest an exact match or does not match exactly any type already in the catalogue.

Potters represented are as follows (Table 41.12).

Table 41.12. List of potters attested on Arretine stamps from Fazzān.

OCK no.	Potter's name	Place/date
612	Cornelius	Arezzo, *c.*AD 10 – 50+ (but stamps *in p. p.* should all be later than *c.*AD 15).
1210	Sex. M(urrius) Cal()	Pisa, *c.*AD 80 – 100+
1211	Sex. M(urrius) Cladus	Pisa, *c.*AD 80+
1212	Sex. M(urrius) Fes(tus)	Pisa, *c.*AD 60 – 150
1213	Sex. M(urrius) P()	Pisa, *c.*AD 60 – 150. Probably the same as the succeeding (rather than *Priscus* who also exists)
1214	Sex. M(urrius) Pi(sanus)	Pisa, late 1st century – 1st half of 2nd century AD.
1690	L. Rasinius Pisanus	Pisa, active *c.*AD 50 – 120
2007	Sulpicius	Only two other examples known, from Chiusi and Ostia, reading SVLPI[ ] and SVLPI. Post *c.*AD 15 as the stamps are *in p. p.*

Type 511

CMD No.	Context	Other information
4133	GER 011 (T 17AB)	*in p. p.*, illegible (possible LRASINPIS)

Conspectus formarum 34.2 (Dr 24/25).

Type 512

CMD No.	Context	Other information
4126	GER 011 (T 17AL)	*in p. p.*, SVLPICI (OCK 2007)
4137	GER 011 (T 17AS)	illiterate. – This *may* be South Gaulish

Conspectus formarum 32 (Dr 27).

Type 513

CMD No.	Context	Other information
4100	GER 011 (T 15G)	lunate: SEXMVPI (OCK 1214.1)
4108	GER 011 (T 15F)	lunate: LRASINPIS (OCK 1690)
4123	GER 011 (T 17I)	*in p. p.*, SEX MF (OCK 1212)
4139	GER 011 (T 17J)	lunate, SEXMP (OCK 1213.35)

Dr 29.

Type 514

CMD No.	Context	Other information
4149	GER 011 (T 17AF)	SEX.M.P (OCK 1213.19)

Conspectus formarum 20.4. The most common form of Italian sigillata plate of the mid 1st century AD. It is still common at Pompeii and in Domitianic deposits at Ostia.

Type 515

CMD No.	Context	Other information
4116	GER 011 (T 17AU)	CORN^ELI (*in p. p.*) (OCK 612.12 or similar)
4119	GER 011 (T 17BG)	CORNE… (*in p. p.*) (OCK 612)
4136	GER 011 (T 17X)	CORN^ELI (*in p. p.*) (OCK 612.12 or similar)
4117	GER 011 (T 17Y)	CORN^ELI (*in p. p.*) (OCK 612.12 or similar)
4105	GER 011 (T 15K)	SMCAL (*in p. p.*) (OCK 1210)
4106	GER 011 (T 15L)	SMCAL (*in p. p.*) (OCK 1210)
4103	GER 011 (T 15N)	MCAL (*in p. p.*) (Kenrick seems to think this is M.N)
4113	GER 011 (T 17AH)	SEX.M.CL (*in p. p.*) (OCK 1211)
4124	GER 011 (T 17AZ)	SEXMCL (*in p. p.*) (OCK 1211)
4114	GER 011 (T 17K)	SEXMCL (*in p. p.*) (OCK 1211)
4253	GER 011 (T 42M)	SEXMCL (*in p. p.*) (OCK 1211)
4226	GER 011 (T 52K)	SEXMCL (*in p. p.*) (OCK 1211.5)
4225	GER 011 (T 52Q)	SEXMCL (*in p. p.*) (OCK 1211.5)
4110	GER 011 (T 17AI)	S…M...I (*in p. p.*) (OCK 1212 or 1213)
4138	GER 011 (T 17AQ)	SEX.M.F (*in p. p.*) (OCK 1212.16)
4132	GER 011 (T 17AR)	SEX.M.F (*in p. p.*) (OCK 1212)
4128	GER 011 (T 17AX)	SEX.M.F (*in p. p.*) (OCK 1212)
4125	GER 011 (T 17BE)	SEX.MF (or P) (*in p. p.*) (OCK 1212 or 1213)
4134	GER 011 (T 17AM)	SEX.MP (*in p. p.*) (OCK 1213.18)
4130	GER 011 (T 17BA)	SEX.M.P (*in p. p.*) (OCK 1213.14)
4127	GER 011 (T 17AQ)	RASINPIS (*in p. p.*) (OCK 1690)
4129	GER 011 (T 17AT)	LRASIN^IPIS (*in p. p.*) (OCK 1690)
4135	GER 011 (T 17S)	…PISAN (*in p. p.*) (OCK 1690, close to .11 or .12)
4227	GER 011 (T 52J)	LRASINPIS (lunate) (OCK 1690)
4228	GER 011 (T 52R)	…NPIS (*in p. p.*) (OCK 1690)
4229	GER 011 (T 52S)	LRA…PISAN (lunate) (OCK 1690.55)
4111	GER 011 (T 17AV)	.I.I.VI. (*in p. p.*) (Kenrick notes the occurrence of similar stamps, also on form 3.2, in the stores at Lepcis Magna)
4115	GER 011 (T 17AW)	.I.I.VI. (*in p. p.*) as on 4111 and 4112
4112	GER 011 (T 17BF)	.I.I.VI. (*in p. p.*) as on 4111 and 4115
4120	GER 011 (T 17AC)	? (illiterate?)
4102	GER 011 (T 15H)	
4104	GER 011 (T 15M)	
4121	GER 011 (T 17AD)	
4131	GER 011 (T 17AN)	? (lunate)
1417	GER 001.3	

Conspectus formarum 3.2. 35 examples, almost all of them from tombs 17 and 15 at GER 011 (Sāniat bin Huwaydī).

South Gaulish

Type 516

CMD No.	Context	Other information
4220	GER 011 (T 52H)	

Dr. 37 (South Gaulish).

Glazed (Italian?)

Type 517

CMD No.	Context	Other information
4243	GER 011 (T 51H)	Sandy reddish-buff, thick, green lead-glaze

African Red Slip Ware

Type 518

CMD No.	Context	Other information
[H66]	GER 011 (T A2.1)	Hayes 1972, 19, no. 1

Hayes Form 2. Late 1st century AD. Not illustrated.

Type 519

CMD No.	Context	Other information
4101	GER 011 (T 15O)	
4235	GER 011 (T 51S)	
	Other examples:	
[H64]	GER 011 (T A2.3)	Hayes 1972, 22-3, no. 20
[H67]	GER 011 (T A2.4)	Hayes 1972, 22-3, no. 23
[H68]	GER 011 (T A2.4)	Hayes 1972, 22-3, no. 24
[H69]	GER 011 (T A2.4)	Hayes 1972, 22-3, no. 25
[H70]	GER 011 (T A2.1)	Hayes 1972, 22-3, no. 26
[H27]	GER 011 (T A2.4)	Hayes 1972, 22-3, no. 27

Hayes Form 3b. Late 1st – Early 2nd century AD.

Type 520

CMD No.	Context	Other information
[H77]	GER 011 (T A2.3)	Hayes 1972, no. 88

Hayes Form 3c. Early-Mid 2nd century AD. Not illustrated.

Type 521

CMD No.	Context	Other information
[H30]	GER 011 (T A2.2)	Hayes 1972, 25, no. 4

Hayes Form 4, Late 1st-Early 2nd century AD.

Type 522

CMD No.	Context	Other information
[H71]	GER 011 (T A2.4)	Hayes 1972, 27, no. 14
[H32]	GER 011 (T A2.1)	Hayes 1972, no. 15

Hayes Form 5. Late 1st – Mid 2nd century AD.

Type 523

CMD No.	Context	Other information
	GER 011 (T A2.3)	Hayes 1972, 29, no. 13
[H33]	GER 011 (T A2.3)	Hayes 1972, 29, no. 14
[H72]	GER 011 (T A2.3)	Hayes 1972, 29, no. 15
[H73]	GER 011 (T A2.3)	Hayes 1972, 29, no. 2
[H74]	GER 011 (T A2.4)	Hayes 1972, 29, no. 3
[H75]	GER 011 (T A2.3)	Hayes 1972, 29, no. 4
[H76]	GER 011 (T A2.4)	Hayes 1972, 29, no. 5
[H96]	GER 011 (T A2.2)	Hayes 1972, 29, no. 6

Hayes Form 6. Late 1st – 2nd century AD.

Type 524

CMD No.	Context	Other information
1368	ZIN 119	Fragmentary, so possibly a Form 9
[H41]	GER 011 (T A2.3)	Hayes 1972, 33, no. 4

Hayes Form 8. Late 1st – 2nd century AD.

Type 525

CMD No.	Context	Other information
	GSC 030 (T 4)	Context noted by CMD; seen in Jarma museum in 2002; not included in Hayes 1972

Hayes Form 75 or 76. Mid 5th century AD.

Type 526

CMD No.	Context	Other information
	ZOU 002	Seen and catalogued by JND in 2000 after a re-examination of the material from this site

Hayes Form 84. 2nd half of 5th century AD.

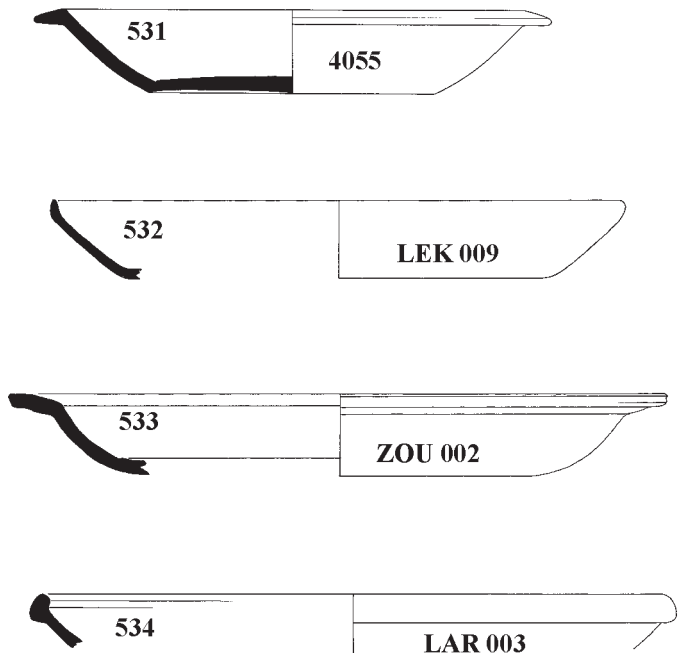


Figure 41.3. Fineware types 531-534. 1:4.

Type 527

CMD No.	Context	Other information
[H29]	GSC 030 (T 14)	Hayes 1972, Type 96, no. 7. Probably the example seen by Hayes in Sabhā Museum.

Hayes Form 96. Late 5th – Mid 6th century AD.

Type 528

CMD No.	Context	Other information
[H7]	Jarma area	Provenance not recorded. Hayes 1972, 173, no. 1
[H12]	Jarma area	Provenance not recorded. Hayes 1972, 173, no. 2

Hayes Form 121.1 – Spouted Jug or Feeder with Strainer. Late 1st – 2nd century AD.

Type 529

CMD No.	Context	Other information
4236	GER 011 (T 51T)	

Hayes Form 126.1 – Spouted Jug or Feeder with Strainer. 2nd century?

Type 530

CMD No.	Context	Other information
4289	GER 011 (T 9F)	Hayes notes that there is a good deal of variation in the form. Our example is closest to that shown on Hayes 1972, Plate IVb.

Hayes Form 137: Small jug with single handle. Late 1st – Mid 2nd century or later.

Tripolitanian Red Slip

Type 531

CMD No.	Context	Other information
4055	GER 011 (T 14A)	
2353	GER 002 (*6*, 10)	Sandy dark red with a dark red slip on its outer surface
[H24 & H26]	GSC 030 (T 3)	Hayes 1972, 305

Hayes Form 2. Late 3rd – 4th century AD. See also Coarseware type 125.

Type 532

CMD No.	Context	Other information
	LEK 009	
[H93]	GER 011	Hayes 1972, 308: 'Variant with heavy knobbed rim'.
[H28]	GSC 030 (T 4)	Hayes 1972, p. 308

Hayes Form 3. 4th century AD +.

Type 533

CMD No.	Context	Other information
	ZOU 002	
[H37]	GER 011	Hayes 1972, 308

Hayes Form 4C. 5th century AD +.

Type 534

CMD No.	Context	Other information
	LAR 003	

Hayes Form 8. 6th century AD +.

PART C. AMPHORAE

Types 1-5.1 (Late Punic – Early Roman)

Types 1-5.1 belong to a class of small (or at least not overly large) cylindrical amphorae (sometimes described as 'cigar-' or 'torpedo-shaped') originating from Tunisia and/or Tripolitania and produced, broadly speaking, between the 3rd to 1st centuries BC and the 1st century AD. Formal parallels can be found within Sabratha Types 7-9 (Dore and Keay 1989) and Van der Werff Forms 1-3 (Van der Werff 1978).

Van der Werff argues strongly (1978, 180) for a principal production centre for his Form 3 (the best equivalent for our types 1-5) in Tripolitania and certainly the fabric which has the strongest association with his form 3 is not dissimilar to that of our examples (1978, 173: Categorie C: 'pâte de couleur allant de orange rouge à la couleur brique. Des zones foncées – gris ou brun-gris – sont fréquent dans la pâte').

Van der Werff regards his form 3 as established by the end of the 3rd century BC and its production (though not its exportation) continuing into the 1st century AD. Its occurrence at Sabratha (Sabratha Type 7) is broadly in agreement with this. In the Casa Brogan a single example of the form occurs in a level of period I which is thought to have begun towards the end of the 4th century BC and to span the 3rd century BC (context xiv, 54; Dore and Keay 1989, 275). In Regio II, Insula 6 the form occurs in quantity in a sequence which dates to the 2nd century BC (contexts xxi 14-17, Dore and Keay 1989, 285). On the north side of the East Forum Temple temenos and portico the form occurs in a pre-Tiberian sequence which is likely to start in the 3rd century BC (context i 43; Dore and Keay 1989, 259), and in the Antonine Temple it is present in a pit group thought to have been deposited in the closing years of the 1st century BC (Kenrick 1986, 175-99).

Five whole or almost whole examples (three from tomb A and two from tomb B) occur in association with Greco-Italic types (see our Type 10) in tombs of Punic type at Mellita near Sabratha (Bisi 1970). Fineware from the tombs dates from the 3rd to the 1st centuries BC.

Type 5.1 is equivalent to Van der Werff's form 1 which was produced in the Carthage region and in Mauretania Tingitana and which had a much wider distribution in the western Mediterranean. It seems to have been established by the second half of the 2nd century BC with export coming to an end round about the Augustan period but production for more localised consumption continuing possibly into the 1st century AD (Van der Werff 1978, 176-7, 193).

There are no examples of these forms in the assemblage from the Tripolitanian pre-desert (published in Dore 1996).

Type 1. Late Punic

CMD No	Context	Other Information
3587	TIN 001 (*BE*, G)	

Type 2. Late Punic

CMD No	Context	Other Information
3647	TIN 001 (*A*, 18, S)	
3608	TIN 001 (*BE*, B)	

Type 3. Late Punic

CMD No	Context	Other Information
1071	GSC 008 (1)	

Type 4. Late Punic

CMD No	Context	Other Information
	GER 001 (*G1*, 802D)	
3595	TIN 001 (*BE*, A)	
3607	TIN 001 (*BE*, B)	
202	UAT 002 (1)	
538	UAT 002 (G)	

Type 5. Late Punic

CMD No	Context	Other Information
3697	TIN 001 (*B*, 17, S)	
3696	TIN 001 (*B*, 17, S)	

Type 5.1. Late Punic

CMD No	Context	Other Information
1103	ZIN 220	Fabric not known

Fabric (Types 1-5): Sandy dark brown or red-brown, often with grey core and dark surface, and a cream slip, sometimes with a pinkish tinge, over the outer surface. The inclusion suite is dominated by abundant, well-sorted, rounded quartz grains the main fraction

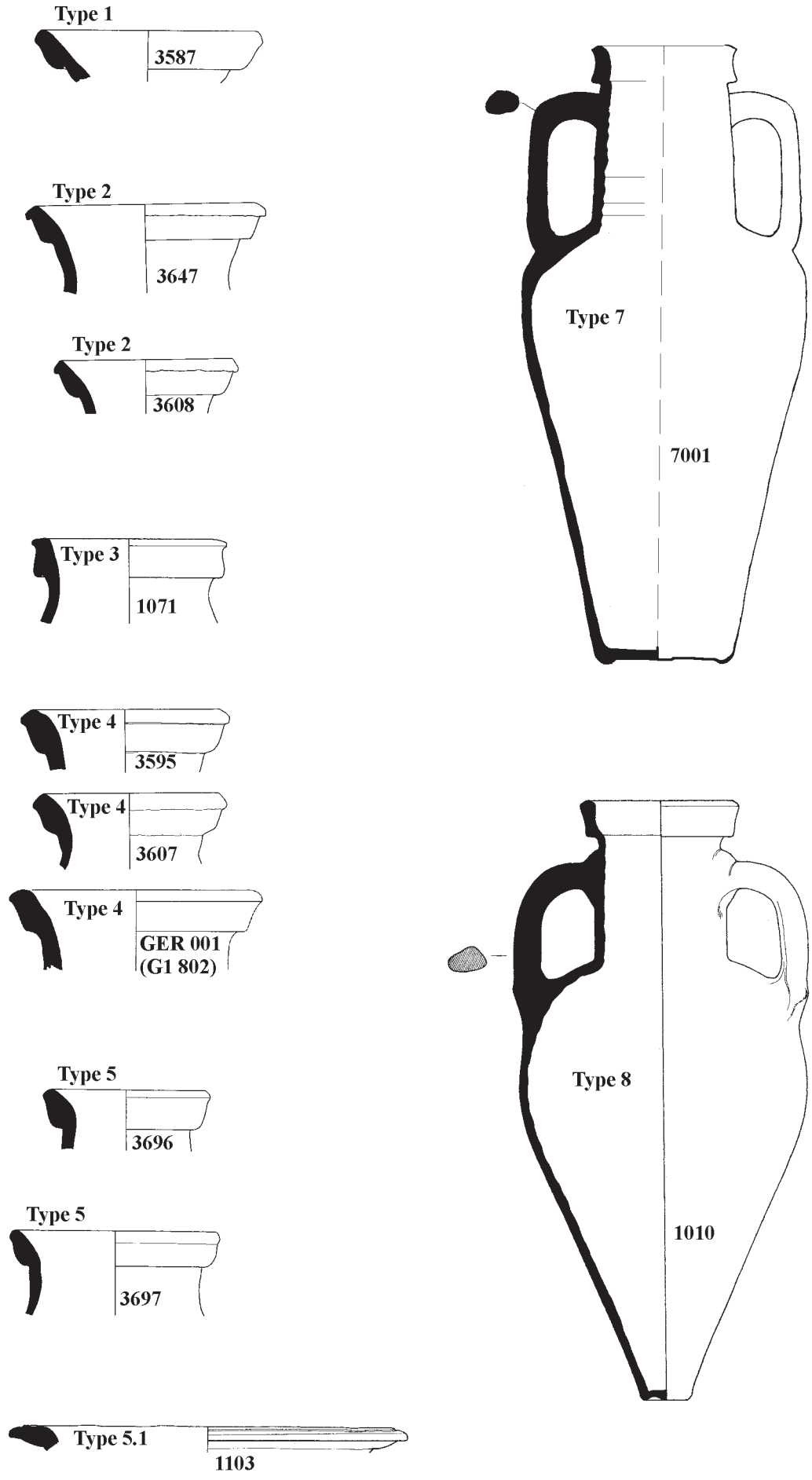


Figure 41.4. Amphora types 1-8. 1:4.

of which is sometimes quite fine, (grain diameter <= 0.1mm), though mostly it tends to be somewhat coarser (grain diameter 0.2-0.3mm). Some examples also have a little lime and red or black iron-rich grains.

Types 6-8 – Small Amphoroid jars

While their rim shape clearly links them with the late Punic and early Roman Tripolitanian amphora series, it is difficult to be sure whether these were vessels for long distance transport of commodities or vessels of more domestic function. In default of a clear decision they have been termed 'amphoroid jars'.

Types 7 and 8 occur in the pre-desert area of Tripolitania (Dore 1996, Types 35 and 36) where their suggested date range is 1st-2nd century AD. Type 8 has been noted at Sabratha (Dore and Keay 1989, 49, no. 245) where it dates to the late 1st-early 2nd century AD. They have not been noted, to date, in the large assemblage of material seen by Dore at Leptiminus, and they may well, therefore, be an exclusively Tripolitanian product.

We have tentatively identified two of the jars in the catalogue as vessels currently on display in Jarma Museum.

Type 6. Small Amphoroid Jar

CMD No	Context	Other Information
7000	Jarma area?	On display in Jarma Museum, labeled 794.

Type 7. Small Amphoroid Jar

CMD No	Context	Other Information
7001	Jarma area?	

Type 8. Small Amphoroid Jar

CMD No	Context	Other Information
1010	GSC 002	On display in Jarma Museum, labeled 793.

Fabric: Sandy red-brown with yellowish-cream slip on the outer surface and the inside of the rim; inclusions: abundant, rounded quartz, 0.1-0.3mm, some lime 0.2-0.5mm.

Type 9. Amphoroid Jar

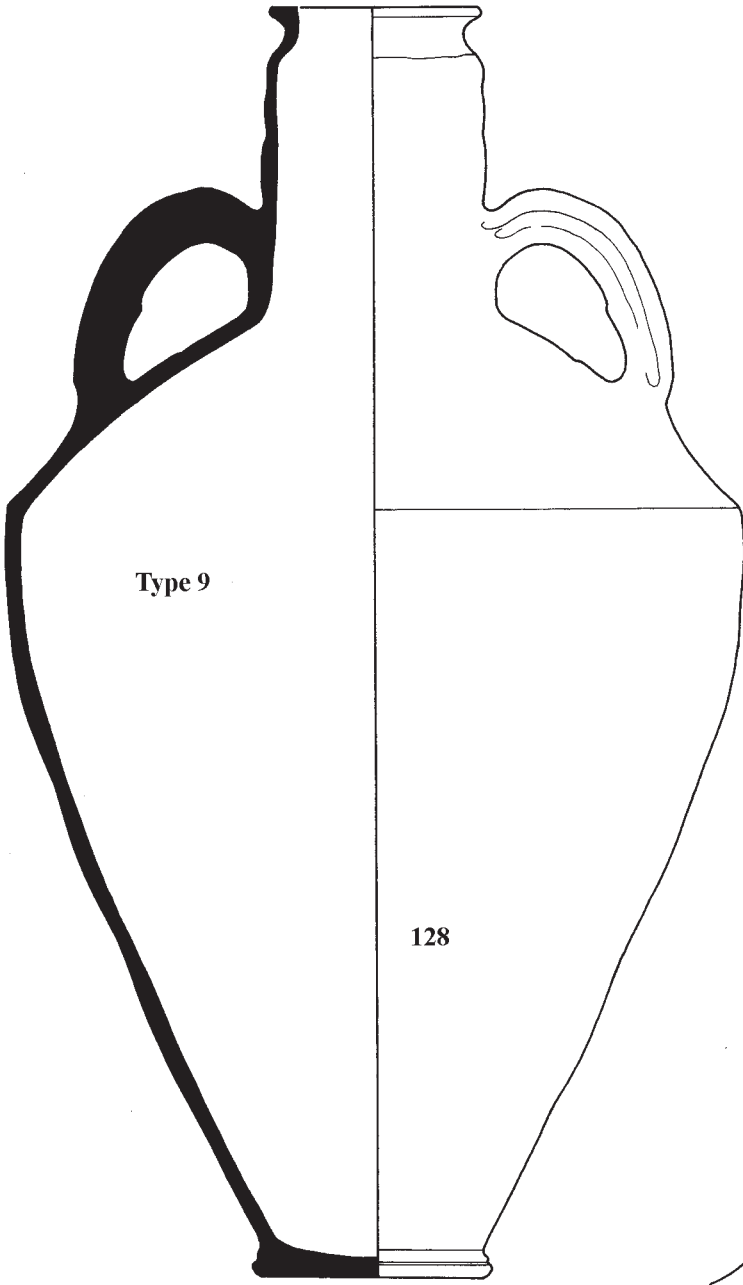
The walls of these vessels seem overly thin to have survived the exigencies of transport over any kind of distance and, as with types 6-8, there is thus some doubt as to whether they can be classed as amphorae.

At present we know of no parallels for the form of these vessels. Their fabric, however, is the same as a type of two-handled jug occurring in the pre-desert area (Dore 1996, Type 58) which has similarities to an early-Roman type at Berenice (Benghazi, Early Roman Jug 1; see Riley 1979).

Three examples are from the Sāniat bin Huwaydī cemetery. One example is from the recent excavations at Jarma (*G1*, 733, Phase 6/7).

CMD No	Context	Other Information
	GER 001 (*G1*, 733)	
4158	GER 011 (T 17G)	
4159	GER 011 (T 17H)	
4160	GER 011 (T 17F)	

Fabric: Sandy red-brown with dark grey to black outer surface. Inclusions: moderate or abundant rounded quartz. the main fraction of which is fine (ie grain diameter <=0.1mm), with occasional larger grains (up to 1.0mm); sparse rounded lime, mostly <=0.2mm, occasionally up to 1.1mm.



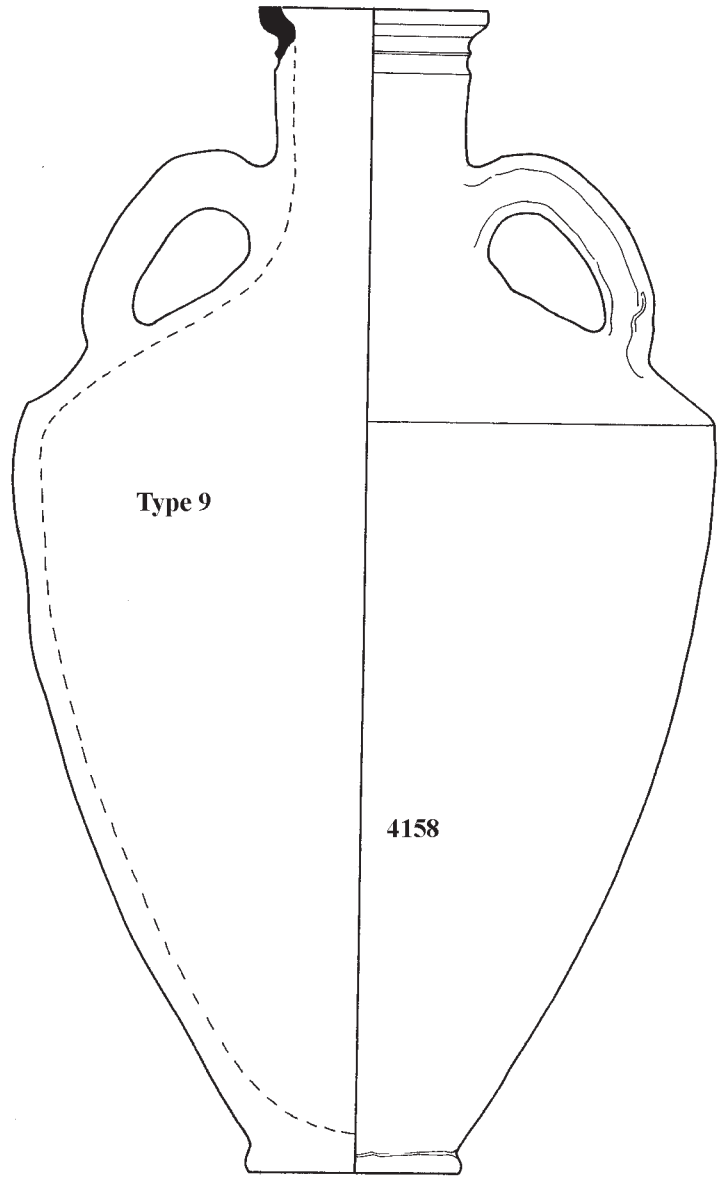


Figure 41.5. Amphora type 9. 1:4.

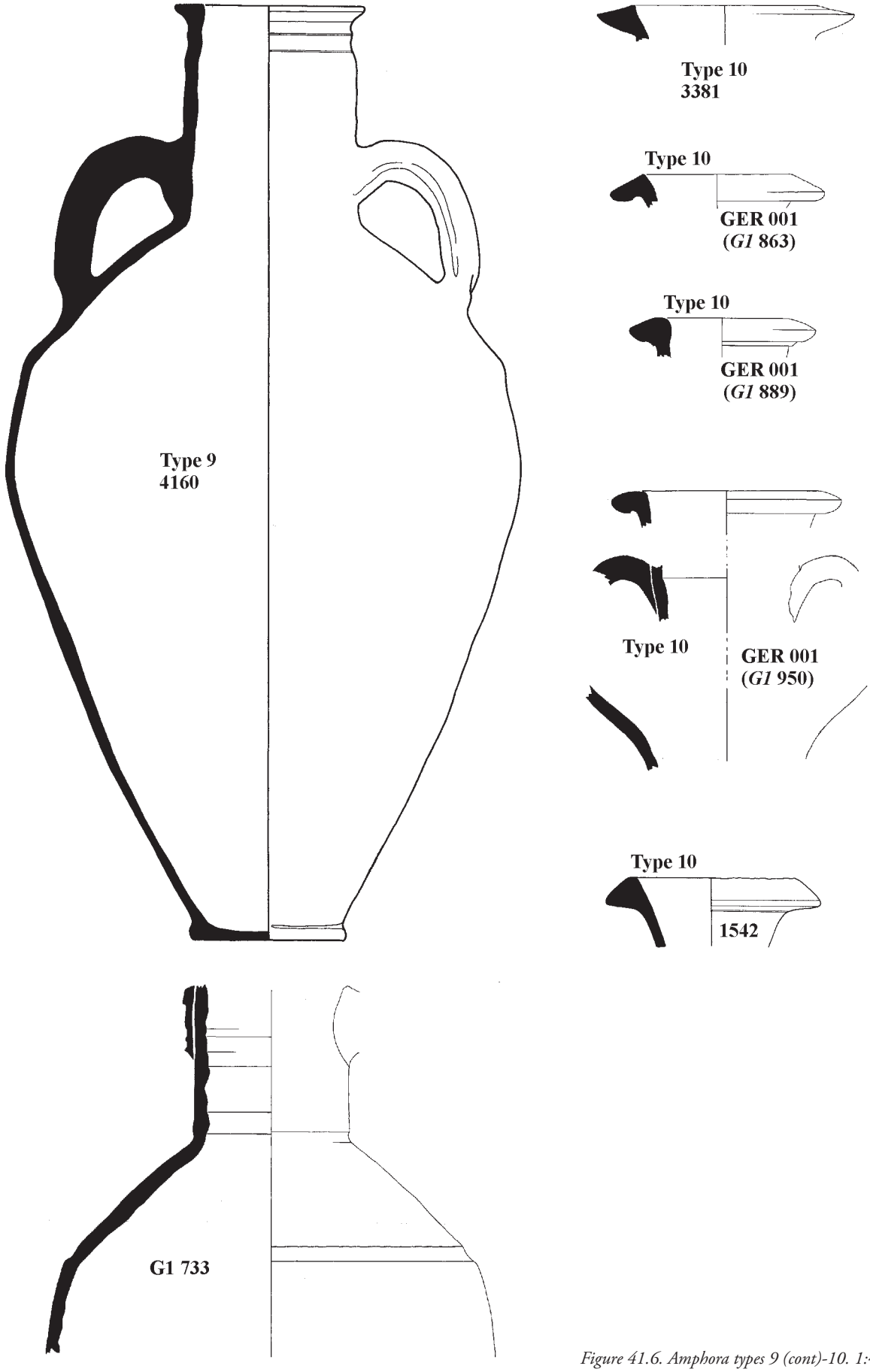


Figure 41.6. Amphora types 9 (cont)-10. 1:4.

Types 10-12. Greco-Italic and Dressel 1

The morphological closeness between the later examples of Greco-Italic amphorae and early examples of the Dressel 1 type is well known, and it is, in any case, extremely difficult to differentiate between the types on the basis of rim sherds alone. We have split the examples from the Project area into three types:
Type 10: Probable Greco-Italic
Type 11: Probable Dressel 1a
Type 12: Dressel 1a

In Italy, production of the Greco-Italic type occupies the better part of the 3rd and 2nd centuries BC, being gradually supplanted during the last third of the 2nd century by the Dressel 1a type whose production lasts until the second half of the 1st century BC.

Type 10 - Probable Greco-Italic

The surviving fragments of GER 001 (*G1*, 950), in particular the handles and the lower body sherd which indicates a hollow basal spike rather than the solid variety of the Dressel 1, identify this vessel as a Greco-Italic type. The form of the rim fragment GER 001 (*G1*, 863) is very similar to it and its fabric is identical.

The forms of the rim fragments GER 001 (*G1*, 889), [3381] and [1542] can be paralleled by vessels of Greco-Italic type found in Tomb B at Mellita near Sabratha (Bisi 1970, fig. 9, no. 2, fig. 10, no. 6 and fig. 8, no. 3, respectively).

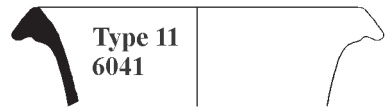
CMD No	Context	Other Information
	GER 001 (*G1*, 863)	Fabric 1
	GER 001 (*G1*, 889)	Fabric 2
	GER 001 (*G1*, 950)	Fabric 1
1542	GSC 017	
3381	GER 002 (2 G)	Fabric 1

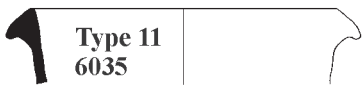
Fabric: At least three fabrics can be distinguished:
1. GER 001 (*G1*, 863 and 950)
Sandy dull purplish pink, smoothed and slipped warm red-brown surfaces. Inclusions: abundant, rounded quartz, the main fraction of which is fine (grain diameter <=0.1mm), with occasional grains up to 0.4mm; moderate rounded lime, main fraction 0.1-0.2mm.
2. GER 001 (*G1*, 889)
Gritty orange brown, wet-slipped cream brown outer surface; a well fired, compact clay matrix with discrete inclusions: moderate rounded quartz, main fraction 0.2-0.4mm; moderate rounded lime, main fraction 0.2-0.3mm; moderate angular shell, main fraction 0.3-0.6mm; sparse rounded black grains, occasional max of 0.2mm.
3. GER 002 (2 G) [3381]
Gritty grey brown with a well defined orange core, dark grey to black surfaces; inclusions: abundant rounded quartz, main fraction 0.3-0.5mm, occasional max of 1.0mm.
Fabric 1 is certainly the same as that in which amphorae of Greco-Italic type occur in Punic tombs at Gargaresh (an example is on display in the Sarai al-Hamra (Department of Antiquities) in Tripoli and has been examined by Dore), and it may well be the same as those of some of the Greco-Italic amphorae at Mellita (those described as having 'argilla color camoscio', see Bisi 1970, 196, no. 2). At least one of these latter has a Punic stamp (the letters Kaf/Nun, Sad) at the base of one of its handles, and Bisi regards their production as local to Sabratha. Fabric 2 is very similar to one in which small amphorae of similar rim form to GER 001 (*G1*, 889) occur at Leptiminus on the central Tunisian coast (see Dore 1992, 132-3, Type 17). Fabric 3 may be the same as another of the fabrics occurring at Mellita (described as having 'argilla grigio-ferro con ingubbiatura biancastra', see Bisi 1970, 196, no. 4)

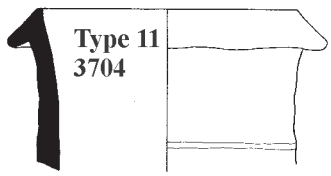
Type 11 Probable Dressel 1a

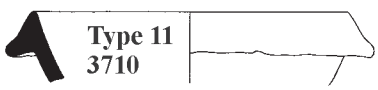
CMD No	Context	Other Information
1846	GER 001.3	Fabric 2
6041	GER 001.3	Fabric 2
3701	TIN 001 (*B*, 17, S)	Fabric 3
3704	TIN 001 (*B*, 21, S)	Fabric 3
3710	TIN 001 (*B*, 21, S)	Fabric 3
6035	TIN 001 (*BE*, B)	Fabric 1

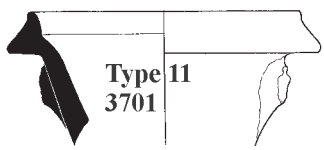
Fabrics: The three fabrics recorded for the catalogued examples can be simply characterised as follows: 1. Sandy; 2. Sandy, lime rich; 3. Gritty. There is no indication from the inclusions that any of them derive from Italy.
1. (GW01)
Sandy dark grey; inclusions: abundant, rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, occasional max of 0.5mm
2. (BW04)
Sandy orange brown, cream slipped outer surface; inclusions: abundant, rounded quartz, main fraction <=0.1mm; abundant rounded lime, main fraction <=0.1mm
3. (CW02.1)
Gritty grey brown, grey surface with cream slip on outside; inclusions: abundant, well rounded quartz, main fraction <=0.2mm, some 0.3-0.5mm, occasional max of 3.5mm.

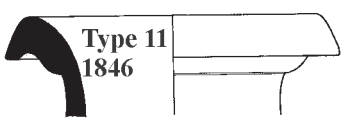


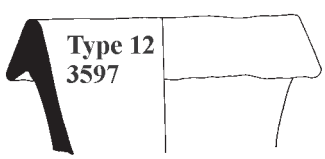


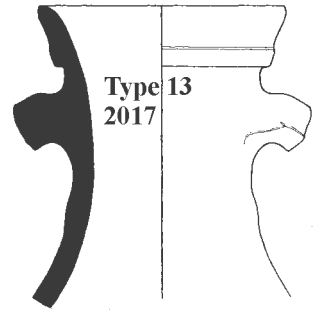


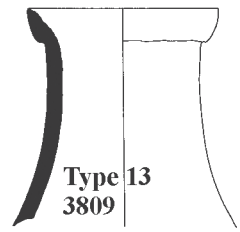












Type 13

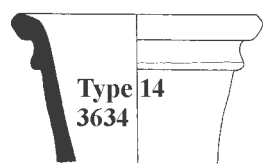


Figure 41.7. Amphora types 11-14. Drawings 1:4. Photograph 1:7 approx.

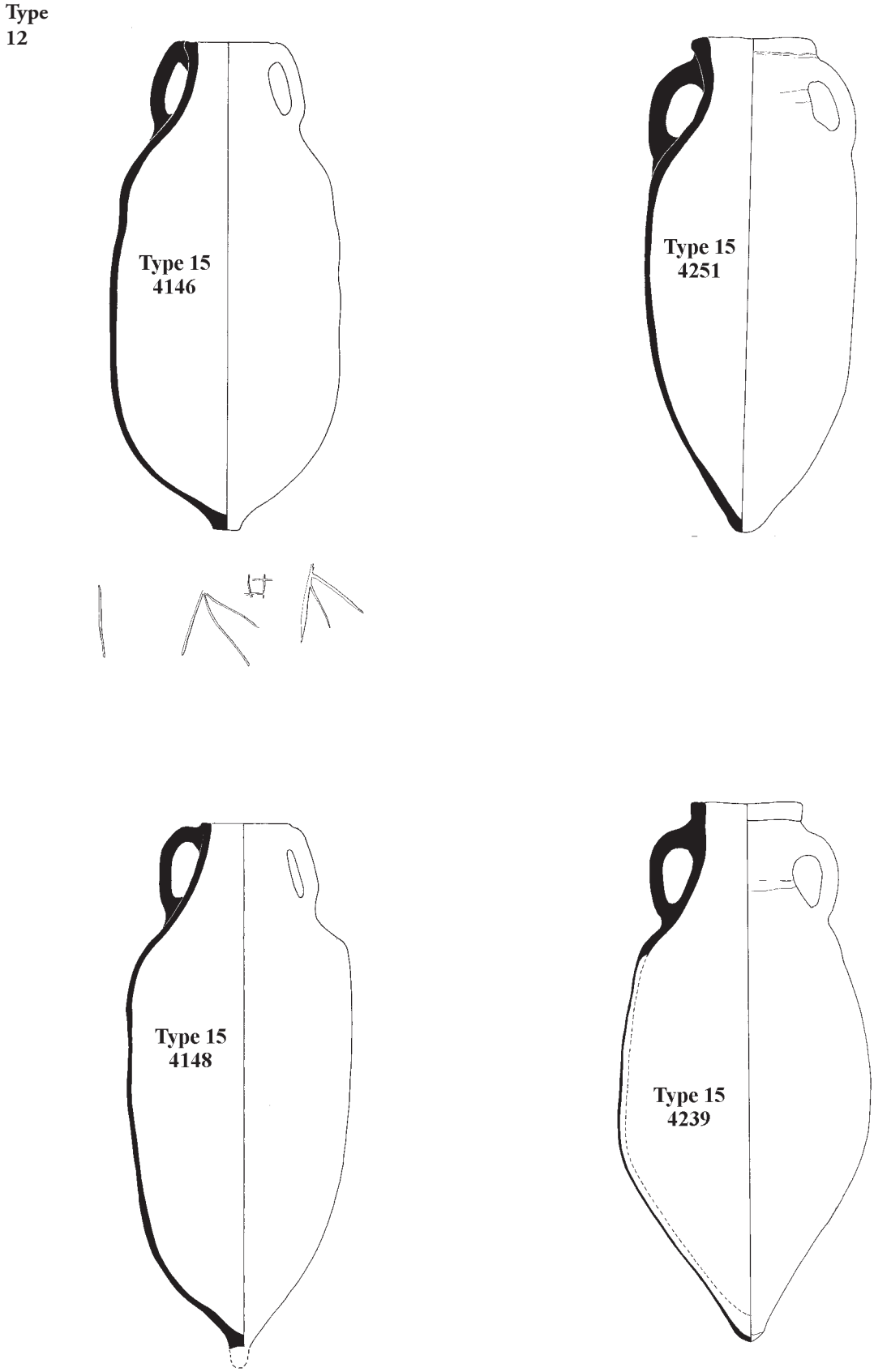


Figure 41.8. Amphora type 15. 1:8.

Dressel 1a
A single example.

CMD No	Context	Other Information
3597	TIN 001 (*BE*, A)	

Fabric: sandy grey

Type 13. Miscellaneous Hellenistic

Possibly related to type 10 (Greco-Italic). What may be a complete example is on display in Jarma Museum (exact provenance unknown). It is of generally similar size and shape to a Greco-Italic amphora but has horizontal strap handles on the shoulder. Its fabric suggests a North African origin. For another possible parallel see Riley 1979, fig. 72, no. 35, from Benghazi, classed as 'Miscellaneous Hellenistic'.

CMD No	Context	Other Information
2017	GER 001.3	Red fabric with lightly slipped red surface
3809	RUG 002	Brown fabric with white flecks; possibly a light slip on the outside, originally

Types 14 – 18. Early Roman

Type 14. Benghazi Early Roman Amphora Type 6
An example of Benghazi Early Roman Amphora Type 6 (Riley 1979, 159). Late 1st century BC – early 2nd century AD.

CMD No	Context	Other Information
3634	TIN 001 (*A2*, 4)	

Fabric: Sandy dark grey with cream slipped surface; inclusions: abundant, rounded quartz, main fraction <=0.1mm, occasional max of 0.5mm; moderate rounded lime, main fraction 0.2-0.4mm, occasional max of 1.2mm.

Type 15. Early Roman Tripolitanian
A small to medium amphora with a capacity varying between *c.*17 and 29 litres (estimated using the same method as described for Type 19). It has an approximately ellipsoidal body with, in several examples, a poorly developed shoulder. The handles spring from the base of the neck and attach to the rim or just below it. The rim is generally poorly articulated, either simply thickened or with a barely developed flange. The pointed base is likewise almost plain in two examples and barely articulated into a small spike in the other examples. Altogether, the standard of manufacture is not high.

CMD No	Context	Other Information
4146	GER 011 (T 17A)	Graffito (Punic?). Estimated capacity 24.9 l
4148	GER 011 (T 17E)	Estimated capacity 29.6 l
4251	GER 011 (T 42E)	Estimated capacity 17.4 l
4239	GER 011 (T 52A)	Estimated capacity 28.4 l

Fabric: Sandy dark grey, orange brown core, greenish cream slip/wash on the outer surface. Inclusions: abundant, rounded quartz, main fraction <=0.2mm, occasional max of 0.5mm; moderate rounded lime, main fraction <=0.1mm-0.3mm.

All four examples are from site GER 011, the cemetery of Sāniat bin Huwaydī. Example [4146] has an inscription which was incised on the body pre-firing. It is debatable whether it is Punic but it could possibly consist of the letters *aleph, ain, shin, nun*, reading from right to left (see Peckham 1968).

Type 16. Early Roman Tripolitanian
This is essentially a higher quality version of Type 15 in terms of standard of manufacture. Enough survives of example [4177] to suggest that the form of the body is the same and the rim form exhibits the flange of type 15.

The example recovered from GER 001 (*G1*, 764) shows clear signs of having been overfired: the rim is extremely distorted and the fabric is black with a 'cokey' and over-cooked feel.

CMD No	Context	Other Information
1845	Jarma area	
	GER 001 (*G1*, 764)	Near waster
2029	GER 001	
1847	GER 001.3	
1833	GER 001.3	
1942	GER 001.3	
2026	GER 001.3	
2020	GER 001.3	
1940	GER 001.3	
3344	GER 011 (*8*, 1)	
3602	TIN 001 (*BE*)	
4183	TWE 002 (c)	
4177	TWE 002 (c)	
3534	ZOU 002	

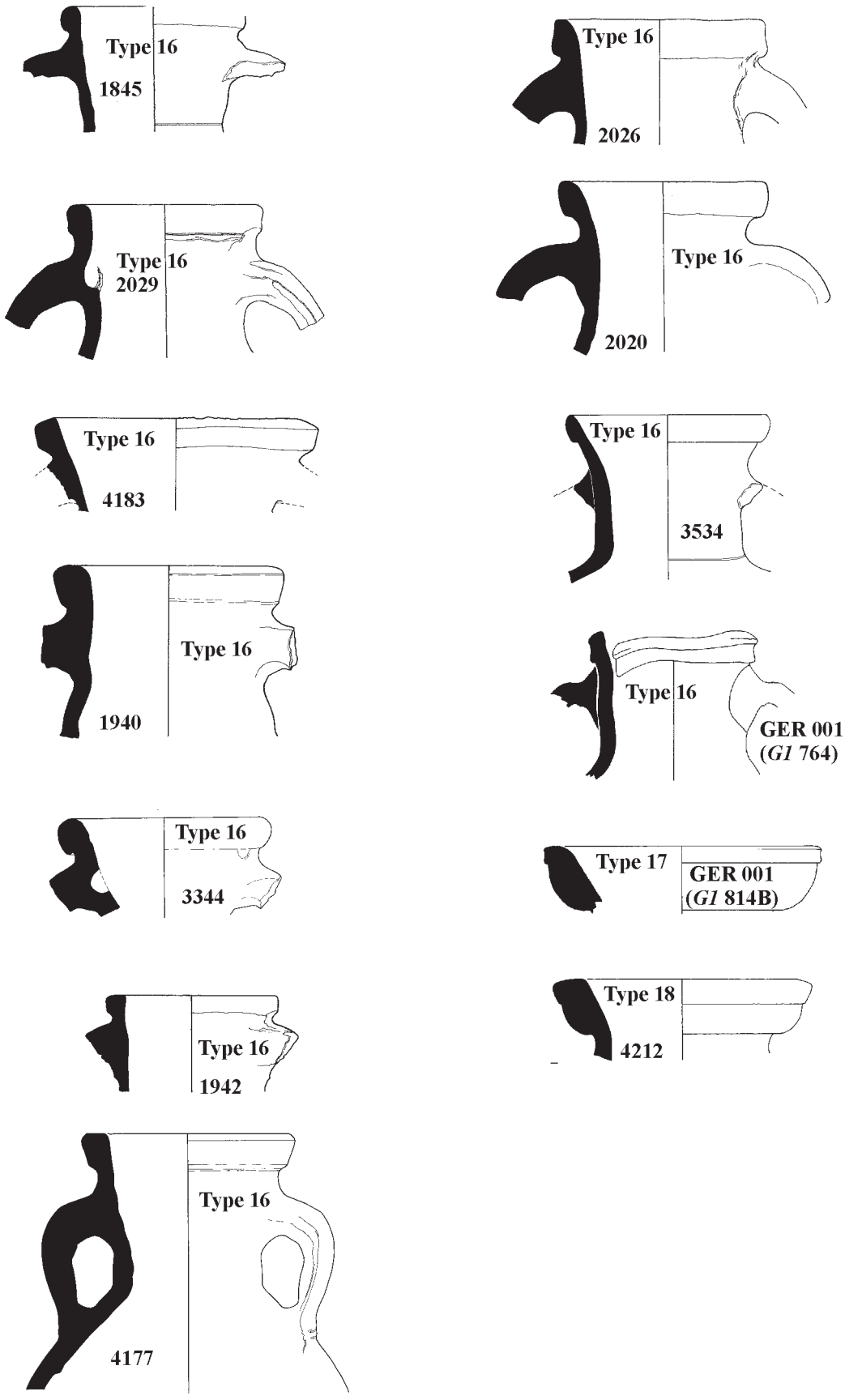


Figure 41.9. Amphora types 16-18. 1:4.

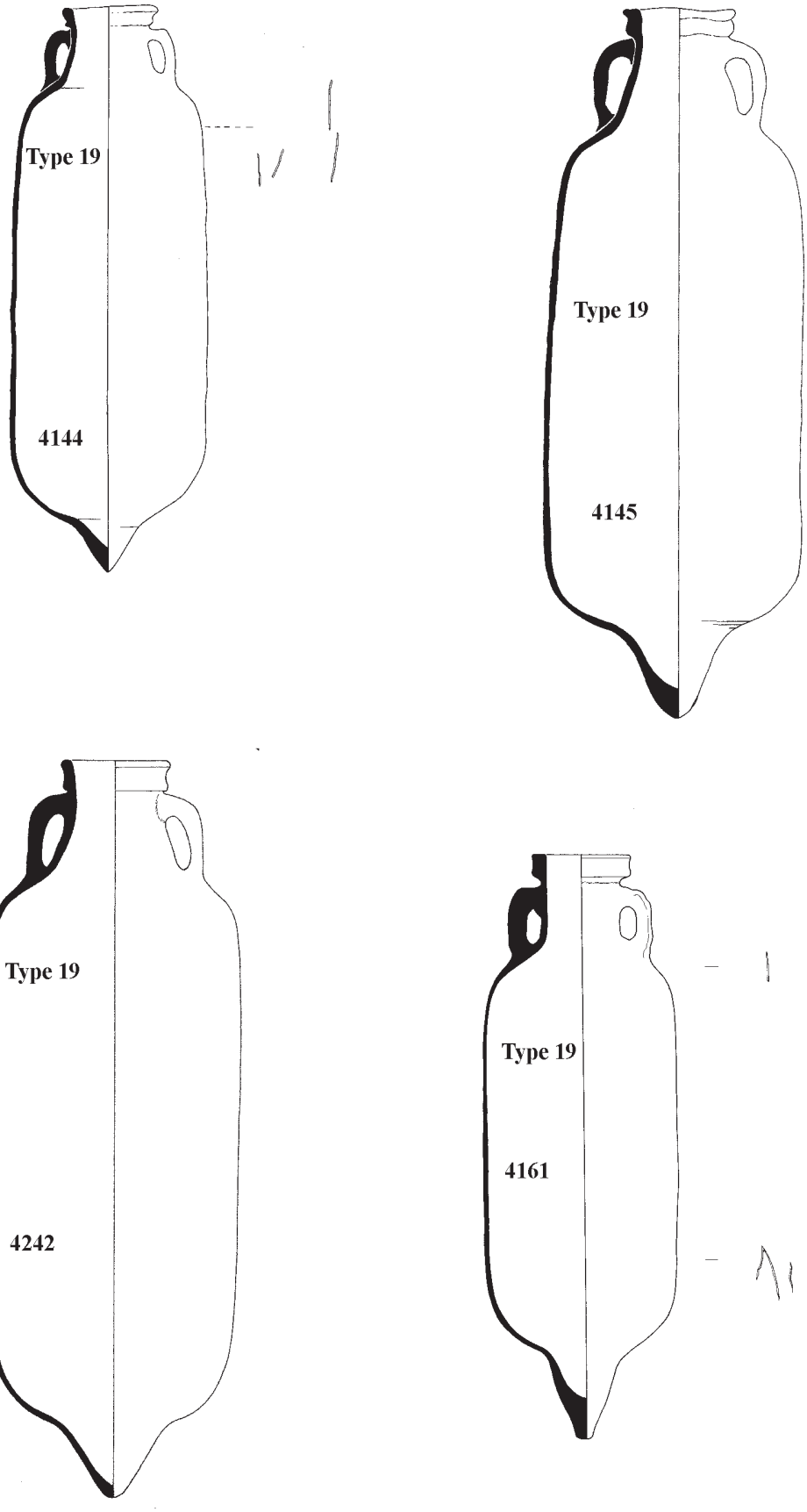


Figure 41.10. Amphora type 19. 1:8.

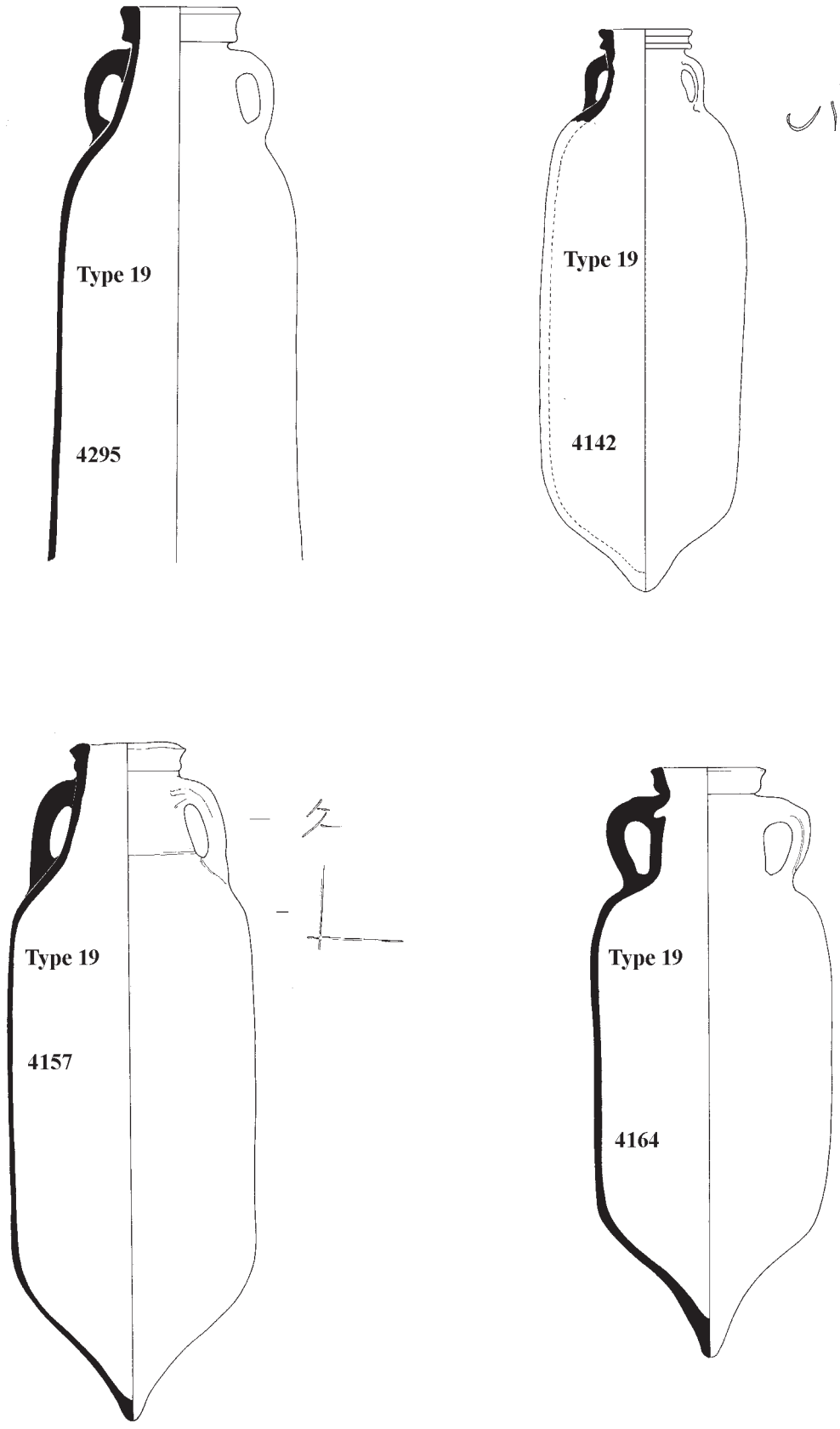


Figure 41.11. Amphora type 19 (cont). 1:8.

Types 17 and 18. Early Roman Tripolitanian
These two closely similar types seem to be formal representatives of the transition between types 1-5, 'Amphores de tradition punique' (Van der Werff 1978), which were current between the 3rd and late 1st centuries BC, and the Tripolitanian series as exemplified by Types 19 and 20 current from the late 1st century AD. They occur at Sabratha (where they are subsumed under a single type, 16b, see Dore and Keay 1989), most notably in Regio II Insula 10 (the Casa Brogan) beneath road surfaces broadly contemporary with period IIIb (late 1st century BC – mid 1st century AD), and at Berenice (where they are similarly subsumed under a single type, 11b) in a deposit (58) dated to the third quarter of the 1st century AD (Riley 1979). They are the earliest amphorae currently known in the Tripolitanian pre-desert (Dore 1996, 355, Type 1) where the start of the Roman ceramic series, on the basis of fineware, is thought to date to *c.* AD 50. Their distribution in central and southern Tunisia and Tripolitania points to a Tripolitanian production since they do not appear to occur in the published assemblage from the House with the Peristyle Mosaic at Uzita (Van der Werff 1982), and only one example is known from Leptiminus (unpublished).

Type 17

CMD No	Context	Other Information
	GER 001 (*G1*, 841B)	2002 drawing

Type 18

CMD No	Context	Other Information
4212	GER 011 (T 51S)	

Fabric: Sandy dark grey with cream coloured surfaces; inclusions: abundant, rounded quartz, main fraction <=0.1mm, occasional max of 0.5mm; moderate rounded lime, main fraction 0.2-0.4mm, occasional max of 1.2mm

Types 19-28 Mid-Roman

Type 19. Early-Mid Roman Tripolitanian
There are ten examples of this type, all complete but one, and all deriving from tombs at GER 011 (Sāniat bin Huwaydī). The form is a small, cylindrical body with a hollow basal spike and a short neck topped by a rim with a moulding of double-stepped profile. There are two handles which attach at the neck, springing from immediately below the rim and the junction of the neck and the shoulder. A feature of [4164] and, to a lesser extent, [4142] is the pronounced indentation visible in the inner wall of the neck at the point where the handle joins the neck, almost certainly made by the potter's finger when the handle was added. Two examples, [4145] and [4157], display quite pronounced distortion of the rim.

CMD No	Context	Other Information
4142	GER 011 (T 15A)	Marks on shoulder. Estimated capacity 20 l
4164	GER 011 (T 1A)	Estimated capacity 25.6 l
4145	GER 011 (T 17C)	Estimated capacity 42.5 l
4144	GER 011 (T 15B)	Marks on shoulder. Estimated capacity 18 l
4157	GER 011 (T 15C)	Marks on shoulder. Estimated capacity 36 l
4161	GER 011 (T 17B)	Marks on shoulder and lower wall. Estimated capacity 19.5 l
4248	GER 011 (T 42B)	Estimated capacity 20 l
4242	GER 011 (T 51V)	Estimated capacity 41.3 l
4241	GER 011 (T 52E)	Estimated capacity 20.5 l
4295	GER 011 (T 53A)	Estimated capacity not less than 33.5 l

Fabric: Sandy orange-brown or red-brown often much darker (dark purple) towards the external surface; usually with traces of a yellowish-cream slip on the external surface; inclusions: abundant, well rounded quartz, main fraction <=0.2mm; moderate sub-angular or rounded lime, main fraction <=0.3mm, though in some examples the grain size can be up to 1.0mm which gives the fabric a distinctive speckled appearance.

An estimate has been made, from the drawings, of the capacities of these vessels by modelling the internal space of each as a simple geometrical solid – a cylinder with a cone at either end, – and then computing the volume by means of the usual mathematical formulae. The results show that the sample of vessels can be divided into two groups, the first, which comprises vessels [4157], [4242] and [4145], having capacities of around 40 l, the second, which comprises vessels [4144], [4161], [4142], [4248] [4241] and [4164], having capacities of around 20 l. Table 41.13 sets out the data and gives the mean, standard error and standard deviation for each group. While caution must be excercised in extrapolating from such a small sample, we might, nevertheless, suggest that the observed variation in group 2 is greater than might be expected in a group of vessels manufactured to the same module (assuming that the capacities of such a group ought to be normally distributed, all other factors being equal). The vessel whose capacity diverges from the mean the most is [4164] at 25.6 l, which is approaching 2SD from the mean. On the basis of this observation, we might suggest that [4164] was manufactured to a different module, one around 25 l, rather than 20 l.

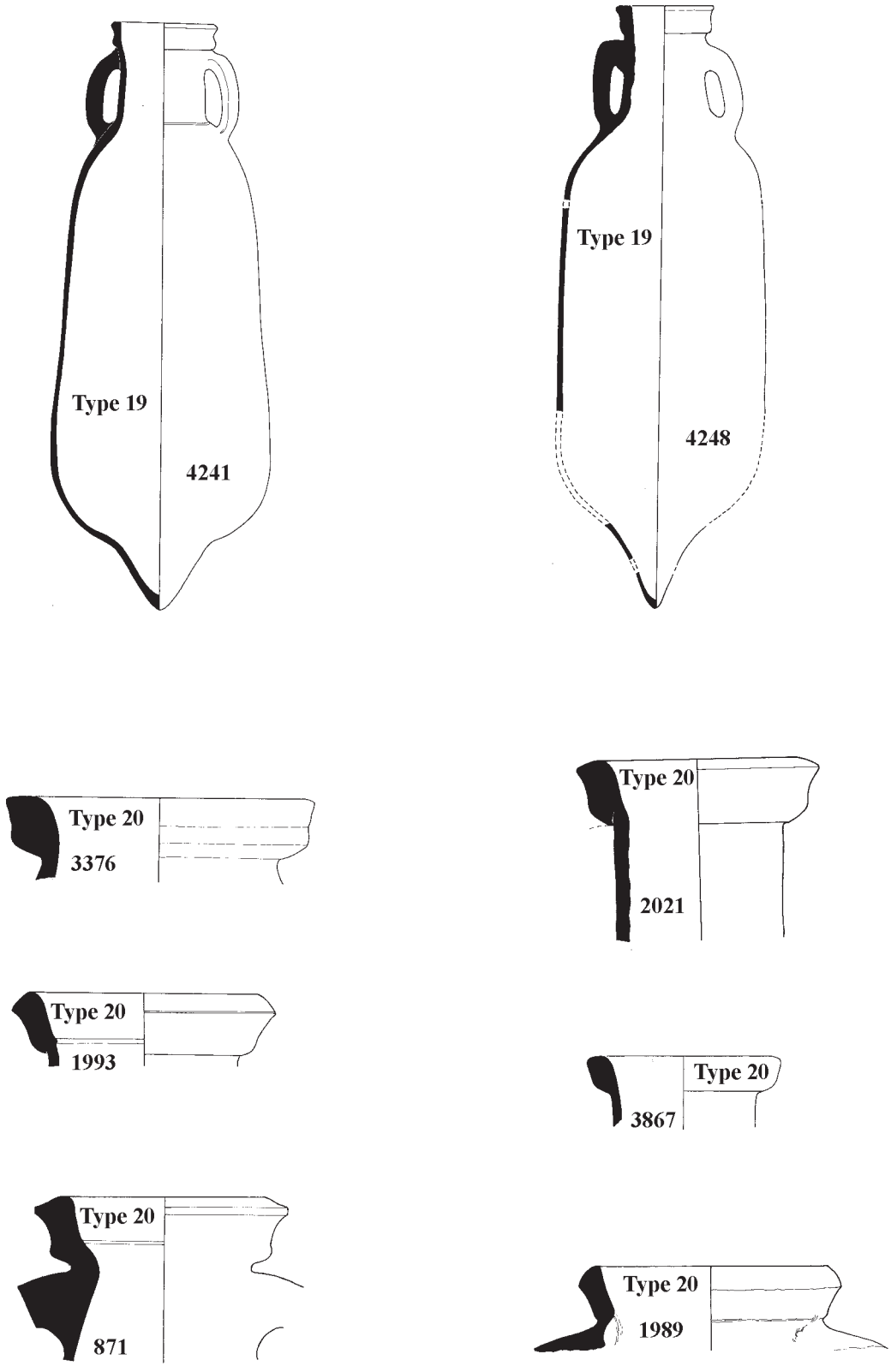


Figure 41.12. Amphora types 19 (cont)-20. 1:8 (19), 1:4 (20).

Table 41.13. Type 19 Amphora Capacities (in litres)

	Group 1	Group 2
	36	18
	41.3	19.5
	42.5	20
		20
		20.5
		25.6
Mean	39.92	20.60
Standard Error	1.99	1.06
Standard Deviation	3.45	2.60

The fabric suggests a regional origin, almost certainly in Tripolitania, and the formal characteristics fall within the range which define Panella's Tripolitana I (Panella 1973), usually dated early 1st – mid 2nd century AD. The type was certainly made at a kiln site at Sīdī al-Sid, on the edge of the Jabal Tarhuna to the south-west of Lepcis Magna (see Arthur 1982). The capacities of the examples from the Sāniat bin Huwaydī tombs are small in comparison to vessels known from the coastal sites and from Ostia. A vessel whose estimated capacity is approximately twice that of the group I vessels is known from a site in the pre-desert (el-Amud Site 4, see Dore 1984, 24), but since the estimate (*c.*105 l) was a maximal one made on the basis of the height of the filling spout in the room where it was found it is possible that the real capacity was less than the estimated. It seems likely, and obvious that a wide variety of capacities were available for the transport of commodities, the choice being governed by the economics of the transaction.

Type 20. Early-Mid Roman Tripolitanian?
Type 20 comprises miscellaneous rim and neck fragments which are probably from vessels of type 19 but which cannot be unequivocally assigned.

CMD No	Context	Other Information
871	Jarma area	
1989	CHA 001	
1993	CHA 001 (g)	
2022	GER 001	
3376	GER 002 (*2*, 4)	
2021	GER 001.4 (8)	
3867	GRE 001	

Fabric: Sandy brown or red-brown, often with redder core; yellowish cream slip on external surface; inclusions: abundant, rounded quartz, main fraction <=0.2mm; moderate rounded lime, main fraction <=0.1mm, occasional max of 0.3m.

Type 21. Mid Roman Tripolitanian
Type 21 comprises miscellaneous rim and neck fragments which are probably from vessels of Panella's types Tripolitana II or III, usually dated 2nd – 4th century AD, but which cannot be unequivocally assigned.

CMD No	Context	Other Information
1991	CHA 001 (g)	
1992	CHA 001 (g);	
2028	GER 001	
1677	GER 001 (5)	
3343	GER 002 (*8*,1)	Fabric 4
3371	GER 002 (*4*, 119)	Fabric 1
2782	GER 002 (*7*, 64)	Fabric 1
3377	GER 002 (g)	
829	GER 001.4 (11)	Fabric 2
1866	GER 001.4 (99)	Fabric 2
3612	TIN 001 (*BE*, B)	Fabric 3
4174	TWE 002 (B)	

Fabric: As is hardly surprising for a miscellaneous catch-all category like this, a number of fabrics are represented. All are well fired, and most are quite lime-rich but the fabric texture is very variable.
1. Fine, orange-brown to grey with a cream coloured slip on the external surface; inclusions: moderate, rounded lime, main fraction 0.1-0.5mm, a little 0.5-0.2mm.
2. Sandy mid brown to mid grey; inclusions: abundant, rounded lime, main fraction <=0.1mm, occasional max of 0.3mm; abundant rounded quartz, main fraction <=0.1mm, occasional max of 0.5mm; sparse, sub-angular, black iron-rich grains, occasional max of 0.5mm.
3. Sandy dark grey; inclusions: abundant, rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, occasional max of 0.5mm.
4. Gritty orange-brown to grey-brown with a dark grey core and a cream coloured slip on the external surface; a well fired, compact clay matrix with discrete inclusions: abundant, rounded quartz, main fraction 0.2-0.5mm; sparse, rounded lime, main fraction 0.2-0.3mm-0.1mm.

Type 22. Mid Roman Tripolitanian
There are two examples of this type, both complete, and both deriving from tombs at GER 011 (Sāniat bin Huwaydī). The form is a small ellipsoidal body with a conical neck which is barely articulated from the body, topped by an everted rim. There is a stubby basal

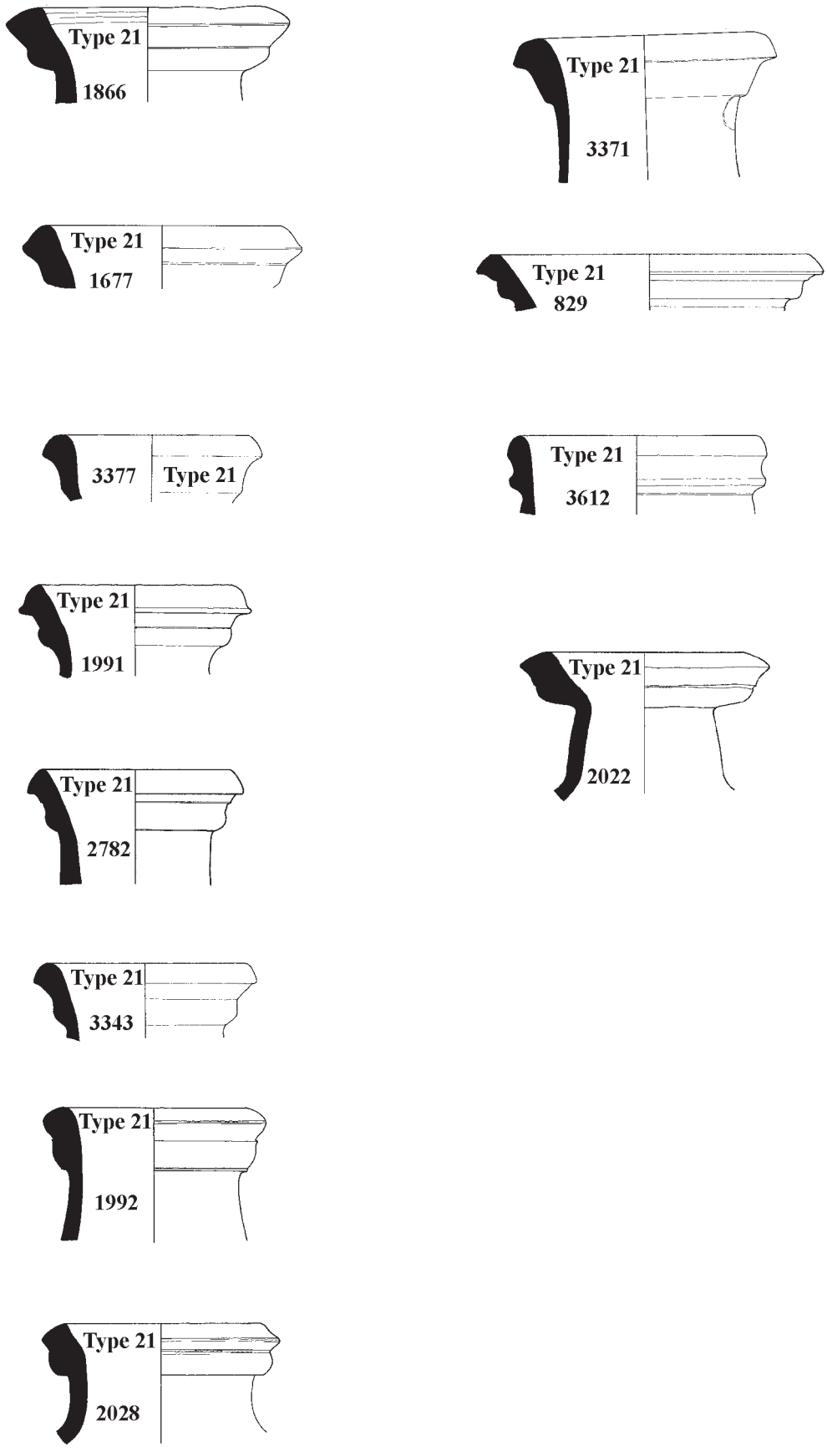


Figure 41.13. Amphora type 21. 1:4.

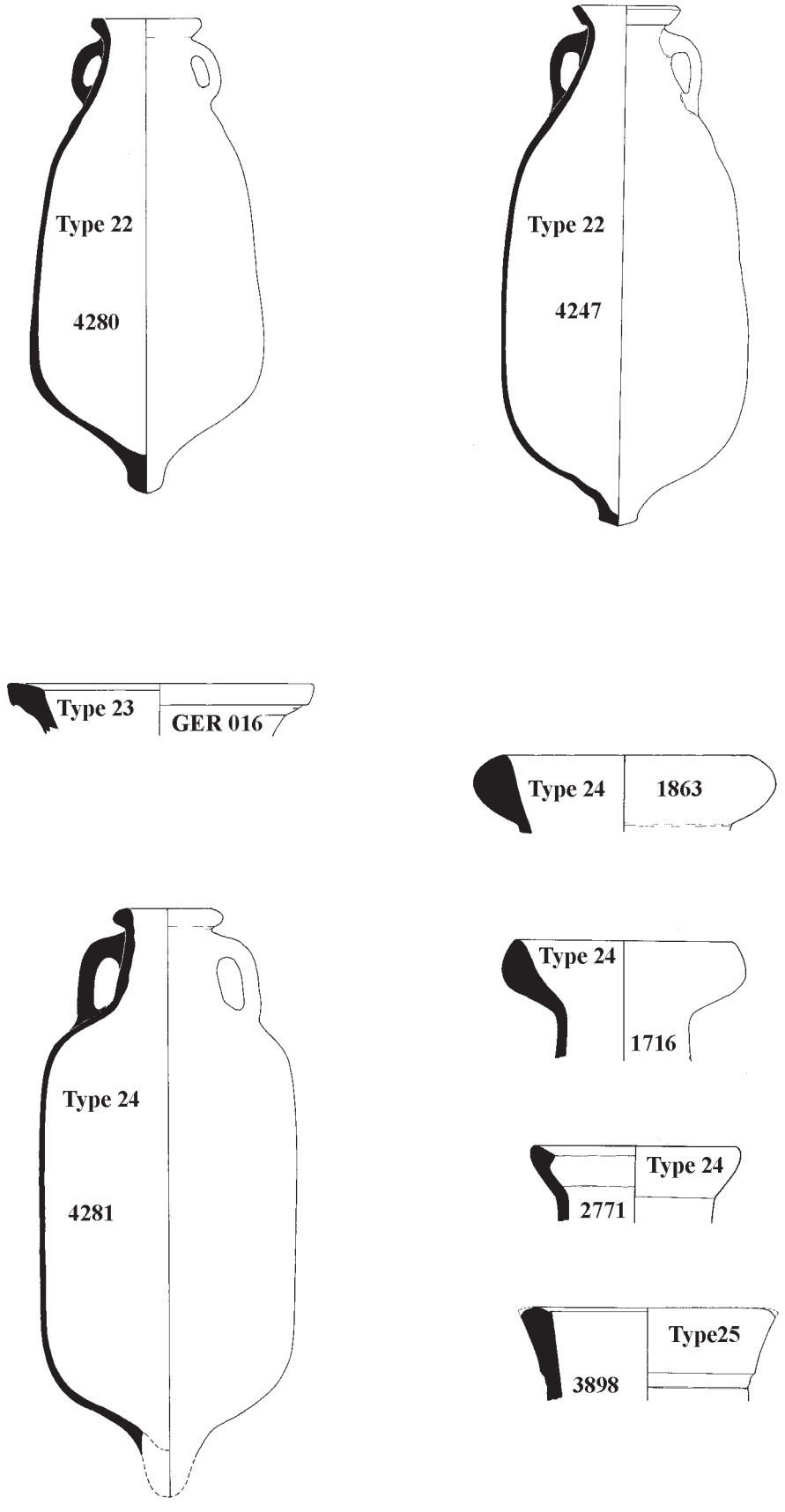


Figure 41.14. Amphora types 22-25. 1:4 (23, 24 except 4281, 25), 1:8 (22, 24.4281).

spike, hollow in [4247] and solid in [4280]. There are two handles which attach at the neck, springing from immediately below the rim and the lower neck. The capacities have been estimated using the same method as described for Type 19. The fabric cannot be differentiated from other Tripolitanian products though there are elements of the form, notably the rim of [4280] and the basal spikes which might be regarded as having greater affinities with the Tunisian 'Africana' series.

CMD No	Context	Other Information
4247	GER 011 (T 42A)	Est. capacity 22.6 l
4280	GER 011 (T 53H)	Est. capacity 15.5 l

Fabric: Well-fired, sandy, dark grey; inclusions: abundant, rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, occasional max of 0.5mm.

Type 23. Mid Roman Tunisian
This type, equivalent to Keay (1984) Type LIX, is now known to have been manufactured at Leptiminus on the central Tunisian coast, just to the south of modern Monastir. Examples were initially identified in material recovered from field survey at Leptiminus (Dore 1992, 133, no. 20), but since then the type has been found closely associated with kilns excavated in the late 1990s (Stirling and Ben Lazreg 2001; Stirling *et al.* 2000). 2nd – 4th century AD.

CMD No	Context	Other Information
	GER 016 (Grab)	
2764	LAR 002 (S)	

Fabric: Sandy, mid brown to mid grey; inclusions: abundant, rounded lime, main fraction <=0.1mm, occasional max of 0.3mm; abundant, rounded quartz, main fraction <=0.1mm, occasional max of 0.5mm; sparse sub-angular black iron rich, occasional max of 0.5mm.

Type 24. Mid Roman Tunisian
A single whole example of this type comes from a tomb at Sāniat bin Huwaydī. The form has a short, broad, cylindrical body with a conical neck topped with a flanged rim of rounded sectional profile. The basal spike has been restored in the drawing. There are two handles which attach at the neck, springing from immediately below the rim and the shoulder. The capacity has been estimated using the same method as described for Type 19. The form has affinities with the Tunisian 'Africana I' series.

CMD No	Context	Other Information
1716	GER 001.3	
2499	GER 002 (*2*, 67)	
2639	GER 002 (*2*, 67)	
2771	GER 002 (*4*, 92?)	
1863	GER 001.4 (99)	
4281	GER 011 (T 6/A1.4)	Capacity: 29.6 l

Fabric: The vessel could not be identified in the Jarma Museum store and thus we do no have a full fabric description. Charles Daniels' notes describe it as 'grey fabric, white flecks, dark surface slip'.

Type 25 . Mid Roman Tunisian
The shape has affinities with the Africana II series, though the other pottery which it is associated with at TIN 001 is largely earlier, that is 3rd century BC to 1st century AD.
Fabric: Sandy red brown with black external surface; inclusions: moderate sub-angular quartz, main fraction <=0.1mm, a little 0.1-0.2mm; sparse rounded lime, occasional max of 1.5mm.

CMD No	Context	Other Information
6022	GER 001.3	
	LEK 006	
3698	TIN 001	

Type 26. Mid Roman Tripolitanian?
There are four complete examples of this type deriving from tombs at GER 011 (Sāniat bin Huwaydī). The form has a short, broad, cylindrical body with a conical neck topped with a flanged rim. There are two handles which attach at the neck, springing from immediately below the rim and the shoulder. The form of the basal spike varies. It is solid in [4250] and hollow in [4282] and 4237], while in [4279] it has been reduced to a knob. The capacities have been estimated using the same method as described for Type 19. The form is very similar to Type 24 and has affinities with the mid Roman 'Africana' series of Tunisian origin (Peacock and Williams 1986, Class 34). Keay (1984) summarises the evidence for the dating of the type around the western Mediterranean and suggests a range of late 2nd – 4th centuries AD. At Sabratha an almost complete example of the type occurred in a context dating to between the mid 3rd and mid 4th centuries AD (Dore and Keay 1989, 44, Type 18).

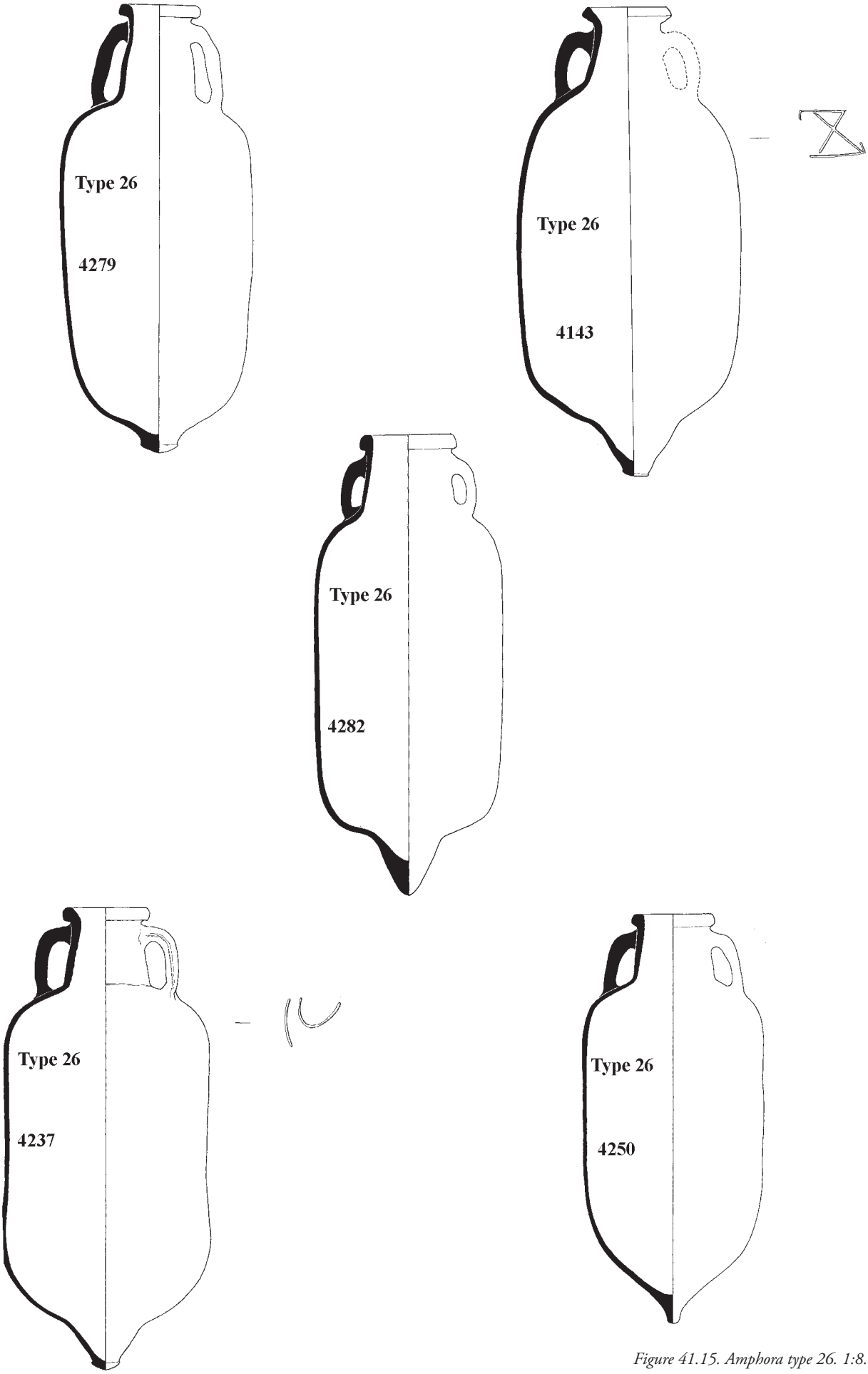


Figure 41.15. Amphora type 26. 1:8.

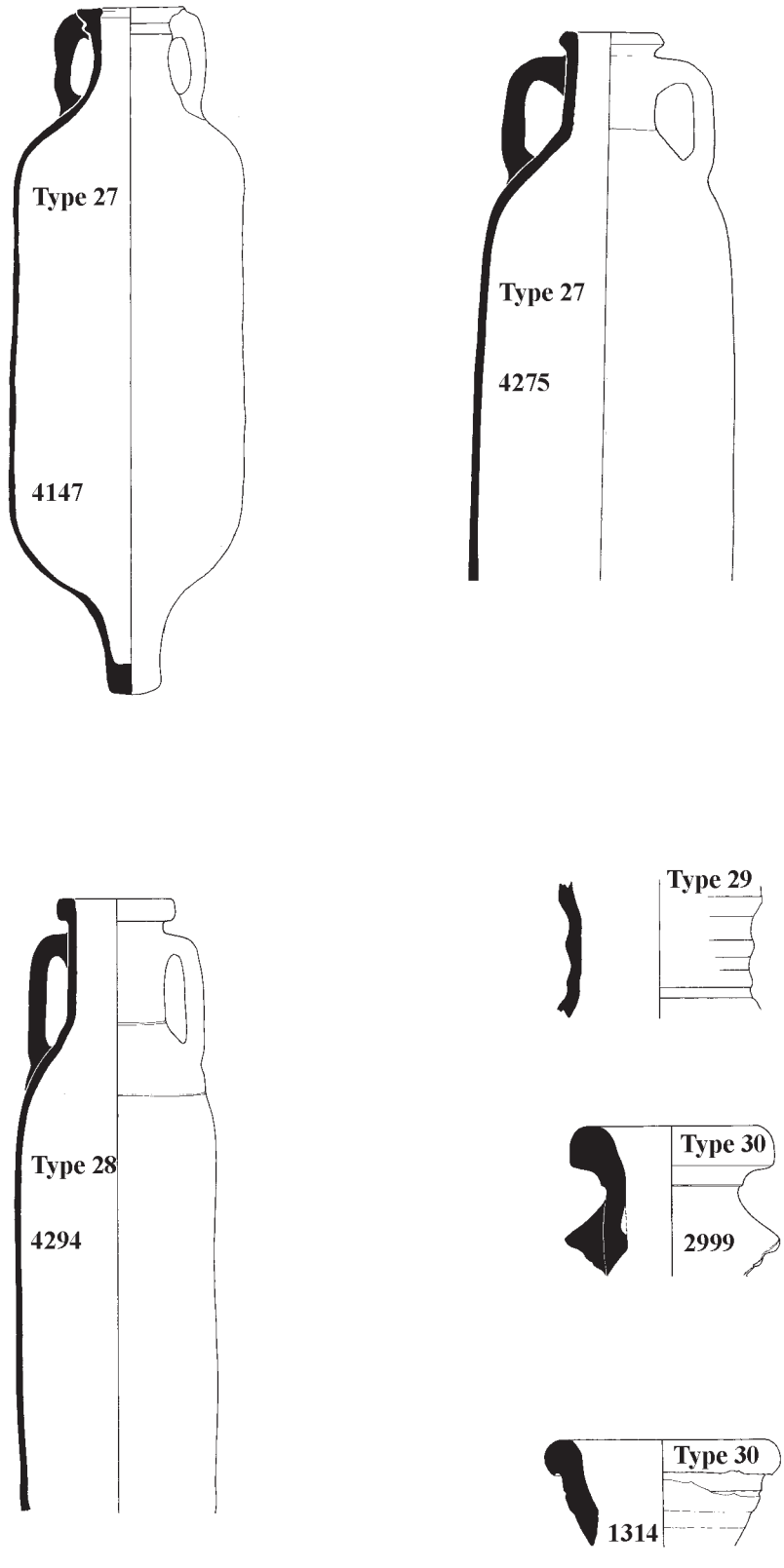


Figure 41.16. Amphora types 27-30. 1:4 (29-30), 1:8 (27-28).

CMD No	Context	Other Information
4143	GER 011 (T 17W)	
4250	GER 011 (T 42D)	Dark plum surface, red fabric. Capacity 18.9 l
4237	GER 011 (T 52C)	Brick red plum fabric. Mark cut on shoulder Capacity: 27.5 l
4282	GER 011 (T 9A)	Reddish fabric, dark plum exterior. Capacity: 23.6 l
4279	GER 011 (T 9B)	Dark brownish fabric, black-brown surface. Capacity: 22 l

Fabric: The vessels could not be identified in the Jarma Museum store and thus we do not have full fabric descriptions. The descriptions from Charles Daniels' notes are given in the table below.

Type 27. Mid Roman
A similar form to Type 26. Both examples are from the tombs at Sāniat bin Huwaydī.

CMD No	Context	Other Information
4147	GER 011 (T 15C)	Buff surface , red brick fabric, possibly also dark grey, no slip
4275	GER 011 (T 53F)	Grey fabric, white flecks, dark surface

Fabric: The vessels could not be identified in the Jarma Museum store and thus we do not have full fabric descriptions. The descriptions from Charles Daniels' notes are given in the table below.

Type 28. Mid Roman
A single example from the tombs at Sāniat bin Huwaydī. The form is similar to type 26, but taller and narrower. The estimated capacity is at least 18 l.

CMD No	Context	Other Information
4294	GER 011 (T 53B)	Red fabric with slip

Fabric: The vessel could not be identified in the Jarma Museum store and thus we do not have a full fabric description. The description from Charles Daniels' notes is given in the table above.

Type 29. Benghazi Mid Roman 7
A wall sherd from an example of Riley's Mid-Roman Amphora 7 from the Aegean (Riley 1979, 189-93, who details the occurrence and distribution of the type and is of the opinion that its date is confined to the 3rd and 4th centuries AD).

CMD No	Context	Other Information
	ZOU 002	

Fabric: Hard, sandy red-brown with darker surface; inclusions: common quartz, mostly <=0.mm, some up to 0.5mm.

Types 30-36 Late Roman

Type 30. Spatheia
The type commonly known as Spatheia (Peacock and Williams 1986, Class 51; Riley 1979, Late Roman Amphora 8a). The type occurred in levels of the 6th century AD at Berenice/Benghazi and Riley (1979) was of the opinion that it did not appear earlier. At Sabratha examples of the type occur in contexts which could be as early as the 5th century AD (Dore and Keay 1989, Type 30) and Freed is of the opinion that this type of small Spatheion went out of production in the Vandal period (Freed 1995, 170).

CMD No	Context	Other Information
2999	CHA 001	
1314	GSC 003 (G)	

Fabric: Gritty mid-brown with a dark grey core; inclusions: abundant, poorly sorted, well rounded quartz, main fraction 0.3-0.5mm, a little 0.5-0.7mm; abundant rounded lime, main fraction <=0.1mm, a little 0.1-0.2mm.

Type 31. Late Roman 1
Late Roman Amphora type 1 probably originating in northern Syria (Riley 1979, 212-6; Riley 1981, 120; Peacock 1984, 119). 5th-7th century AD. The occurrence of this type in the Wadi al-Ajial was only firmly established comparatively recently (during the 2000 season of the Fezzan Project). A limited re-examination of material in the Jarma Museum store was made in order to search for further occurrences of this and other late types, but not all the material could be located and thus the list of contexts given below should not be regarded as exhaustive.

CMD No	Context	Other Information
	CLF 003	
	GBD 001 (NW Quad)	
3842	GRE 001A	
	LEK 009	
	GSC 030 (T 20/21F)	

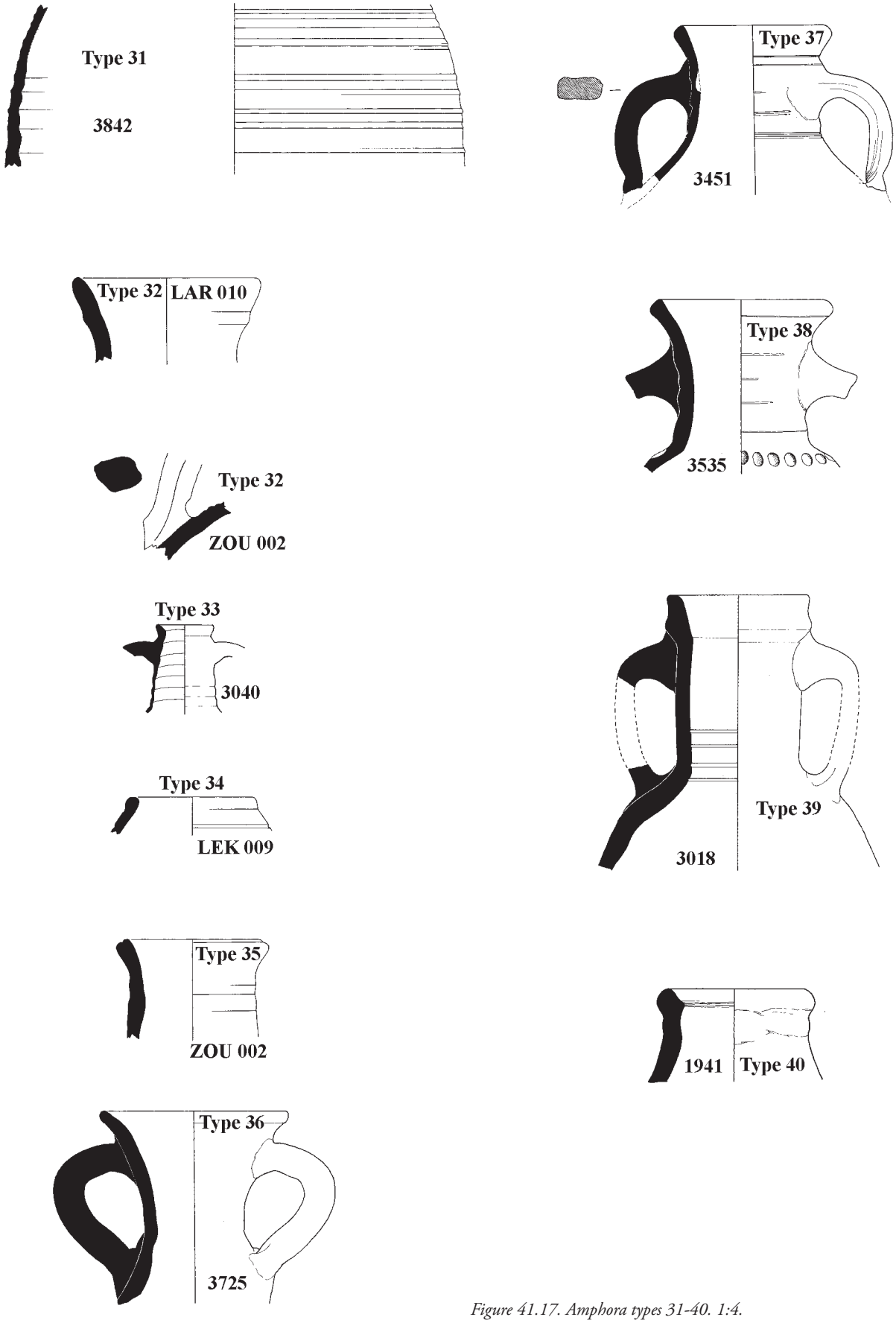


Figure 41.17. Amphora types 31-40. 1:4.

Fabric: Sandy, grey-, pinkish-, or yellowish-brown with (in one example) a thick grey-brown core; one example shows a wet-slipped yellowish-cream outer surface; inclusions: moderate to abundant rounded quartz, mostly 0.2-0.5mm, moderate sub-angular black vitreous grains, 0.2-0.5mm; two examples show moderate rounded lime, 0.2-0.6mm.

Type 32. Late Roman 2
Late Roman Amphora Type 2, produced in Turkey (and probably other places; Riley 1979, 217-9; Riley 1981, 122; Peacock 1984, 119). Late 4th – late 6th centuries. The remarks on the recorded distribution of these late types in the Wādī al-Ajāl made above under type 31 also apply.

CMD No	Context	Other Information
	LAR 010	
	ZOU 002	

Fabric: 1. Sandy orange pink with a greenish-orange outer surface and orange-brown inner; inclusions: moderate limestone up to 1.0mm in a silty matrix; limestone is mostly void on the surface. (LAR 010).
2. Sandy warm mid-brown with pale yellowish-cream surface; inclusions: abundant rounded quartz up to 0.5mm; moderate rounded red and black iron-rich grains, 0.2-0.5mm. (ZOU 002).

Type 33. Late Roman 3
Carthage Late Roman Amphora Type 3, probably from Asia Minor (Riley 1981, 118; Peacock 1984, 121). 5th and 6th centuries AD. The remarks on the recorded distribution of these late types in the Wādī al-Ajāl made above under type 31 also apply.

CMD No	Context	Other Information
3040	CHA 001	Hard buff sandy fabric; light slip
	GSC 001 (C)	

Fabric: The vessels could not be identified in the Jarma Museum store and thus we do not have full fabric descriptions. The descriptions from CMD's notes are given in the table below.

Type 34. Late Roman 4
Carthage Late Roman Amphora 4 originating from Gaza in Palestine (Riley 1979, 219; Riley 1981, 120; Peacock 1984, 121, no. 5). It seems to be present at Carthage before the end of the 4th century AD (Riley 1984, 120) and continued to be imported certainly to the end of the 6th century.

CMD No	Context	Other Information
	LEK 009	

Fabric: Sandy red-brown; inclusions: abundant rounded quartz mostly <=0.2, some up to 0.5mm.

Type 35. Keay Type 52
A possible example of Keay Type 52. The identification was suggested by comparison with an example on display in the Byrsa Museum at Carthage. 4th-6th (at least) century AD (see Peña 1999, 73; Pacetti 1998). At Sabratha an example occurs in a fill predating the reversion of Regio II, Insula 10 to domestic purposes at the end of the 4th century AD (Dore and Keay 1989, 46, Type 22).

CMD No	Context	Other Information
	ZOU 002	

Fabric: Sandy red-brown with cream coloured surface.

Type 36. Late Roman
A single example of a type which has parallels in late 5th – early 6th century AD deposits at Carthage (Peacock 1984, fig. 39, nos 53-55)

CMD No	Context	Other Information
3725	RUG 001 (G)	

Fabric: Well-fired, sandy, dark grey; inclusions: abundant rounded quartz mostly <=0.2mm, occasionally up to 0.5mm.

Types 37-43 Probable Late Roman

Type 37. Probable Late Roman
Unassigned, probably late. Possibly another example of Late Roman Amphora 2 (see type 32).

CMD No	Context	Other Information
3451	CLF 002	

Fabric: Red fabric, fired dark to purple in places on external surface.

Type 38. Probable Late Roman
Unassigned, probably late.

CMD No	Context	Other Information
3535	ZOU 002 (G)	

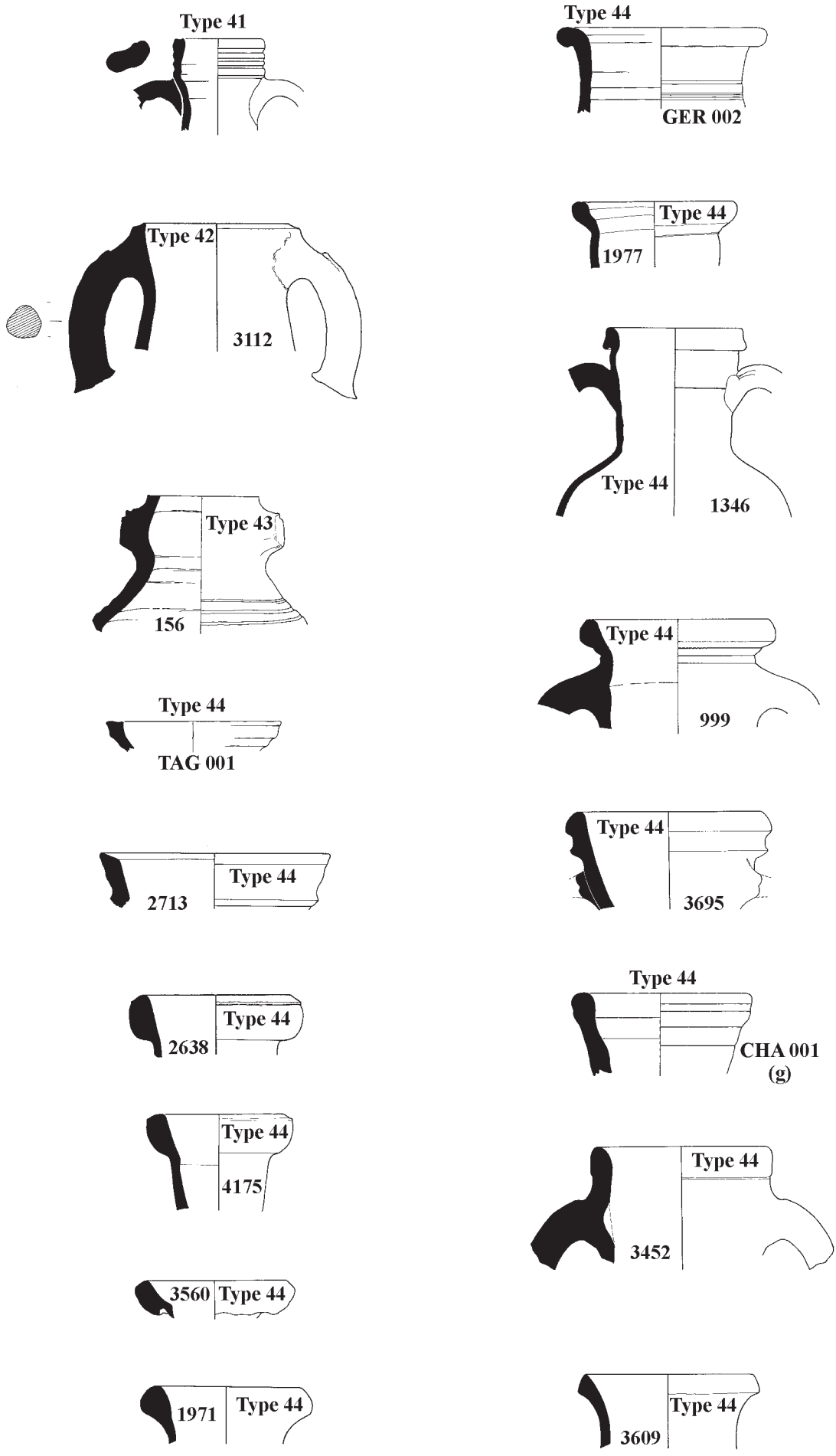


Figure 41.18. Amphora types 41-44. 1:4.

Fabric: Sandy, red-brown with black surface; inclusions: abundant rounded quartz, mostly <=0.1mm, some 0.2-0.3mm, occasionally up to 0.5mm; sparse rounded lime, 0.2-0.5mm.

Type 39. Probable Late Roman
Unassigned, probably late.

CMD No	Context	Other Information
3018	FJJ 006 (1)	

Fabric: Red, coarse red slip.

Type 40. Probable Late Roman
Unassigned, probably late.

CMD No	Context	Other Information
1941	GER 003 (115)	

Fabric: Sandy orange-brown; abundant rounded quartz and lime <=0.1mm.

Type 41. Probable Late Roman
Unassigned, probably late.

CMD No	Context	Other Information
	BBA 015	

Fabric: Orange, white external surface.

Type 42. Probable Late Roman
Unassigned, probably late.

CMD No	Context	Other Information
1312	GSC 005 (g)	

Fabric: Sandy mid-brown to grey; inclusions: abundant rounded quartz mostly <=0.1mm, occasionally up to 0.5mm; abundant rounded lime, mostly <=0.1mm, occasionally up to 0.3mm; sparse sub-angular black iron-rich grains, 0.2-0.5mm.

Type 43. Probable Late Roman
Unassigned, probably late.

CMD No	Context	Other Information
156	TAG 001 (G01)	

Fabric: Reddish-buff, hard yellow slip on external surface.

Type 44. Miscellaneous Unassigned

Miscellaneous unassigned amphorae.

CMD No	Context	Other Information
3609	Jarma area	Sandy red-brown, black outer surface; inclusions: moderate sub-angular quartz, main fraction <=0.1mm; a little 0.1-0.2mmsparse rounded lime, occasional max of 1.5mm
6000	Jarma area	Well-fired, sandy dark grey; inclusions: abundant rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, occasional max of 0.5mm
1919	Jarma area	Yellowish-grey slip
1977	CHA 001	
2999	CHA 001	Sandy, dark, lime-rich fabric
1929	CHA 001	Black
1971	CHA 001 (g)	Darkish fabric, grey surface
1972	CHA 001 (g)	White plum inside and grey plum outside, traces of light slip
1992	CHA 001 (g);	Hard sandy brown fabric; lime and red grains visible
3452	CLF 002	Black surface; traces of slip
3845	FJJ 006	
3082	FJJ 006 (2)	Sandy, dark pink lime-rich fabric,
	TAG 001	
	CHA 001 (grab)	
1334	GER 002	
3049	FUG 003	
3560	GEL 004 (G)	Dark lime-rich fabric, black surface
	GER 002	
1569	GER 001.1	Hard grey fabric
6003	GER 001.3	Sandy pale grey, dull orange brown surfaces; inclusions: abundant rounded quartz, main fraction <=0.1mm, a little 0.2-0.5mm
2337	GER 001.3	
6023	GER 001.3	Dark grey, thin well defined, greenish cream slip over outer surface; inclusions: sparse rounded quartz, main fraction 0.1-0.2mm; sparse rounded lime, main fraction 0.1-0.2mm; silty matrix

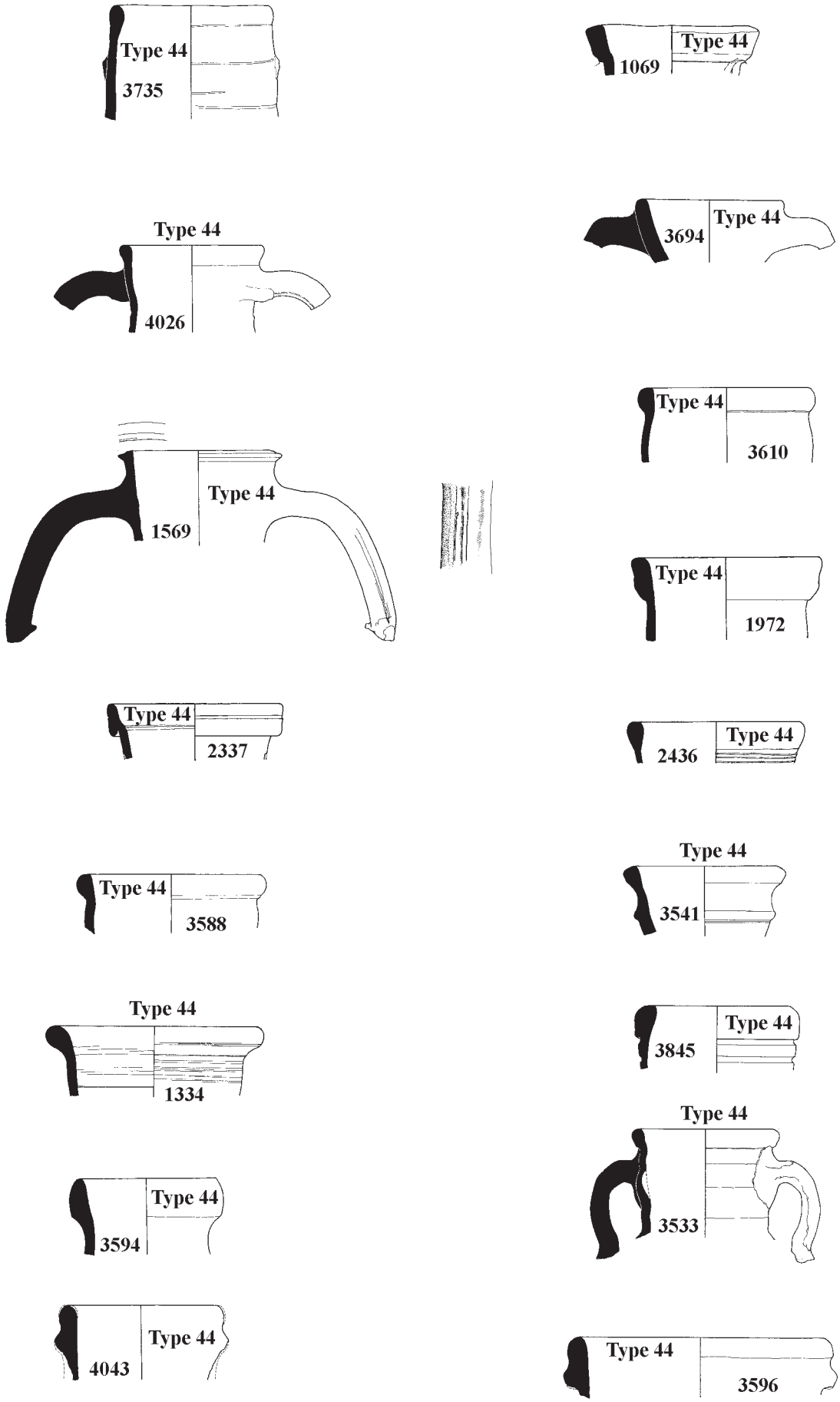


Figure 41.19. Amphora types 44 (cont). 1:4.

CMD No	Context	Other Information
6051	GER 001.3	Sandy red-brown, black outer surface; inclusions: moderate sub-angular quartz, main fraction <=0.1mm, a little 0.1-0.2mm; sparse rounded lime, occasional max of 1.5mm
6015	GER 001.3	Sandy dark grey; inclusions: abundant rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, occasional max of 0.5mm
2276	GER 001.3 (*2*, 13)	Sandy red-brown, black surfaces; inclusions: abundant rounded quartz, main fraction 0.1-0.3mm, a little 0.4-0.6mm, occasional max of 1.5mm
2713	GER 001.3 (*7* 55)	
6017	GER 016 (909)	Sandy pale grey, dull orange brown surfaces; inclusions: abundant rounded quartz, main fraction <=0.1mm, a little 0.2-0.5mm
2705	GER 002	
2780	GER 002	
2636	GER 002	
2526	GER 002	
3102	GER 002	
3374	GER 002	
2336	GER 002 (*2*, 12)	Fine orange-brown, diffuse brownish grey core core; inclusions: moderate rounded quartz, main fraction 0.1-0.2mm; moderate rounded lime, main fraction 0.1-0.2mm, occasional max of 2mm; moderate angular red grains, main fraction <=4mm; moderate angular black grains, main fraction <=4mm
2436	GER 002 (*2*, 30)	Red buff with dark brown surface
2638	GER 002 (*4*, 30)	Dark grey
2079	GER 003 (113)	Dark liver-coloured, plumb-coloured external surface with yellowish patches
1069	GSC 003	Hard grey fabric
1346	GSC 006 (g)	BW
1013	GSC 001	
4026	LEK 007 (S)	Hard black
3819	LEK 009	Sandy dull red fabric, darker surfaces and a lighter slip
3235	RUG 003	Gritty dark red fabric, black surface

CMD No	Context	Other Information
4043	TIN 001 (*B*)	Hard dark grey fabric; some lime flecking
3694	TIN 001 (*B*)	Buff fabric
3679	TIN 001 (*B*, 12, S)	Gritty grey-brown, grey surface with cream slip on outside; inclusions:abundant well rounded quartz, main fraction <=0.2mm, some 0.3-0.5mm, occasional max of 3.5mm
3695	TIN 001 (*B*, 17, S)	Sandy red-brown, black surfaces; inclusions:abundant, rounded quartz, main fraction 0.1-0.3mm, a little 0.4-0.6mm, occasional max of 1.5mm
3594	TIN 001 (*BE*, A)	Dark grey
3596	TIN 001 (*BE*, A)	Sandy red-brown, black surfaces; inclusions: abundant rounded quartz, main fraction 0.1-0.3mm, a little 0.4-0.6mm, occasional max of 1.5mm
6034	TIN 001 (*BE*, B)	
3588	TIN 001 (*BE*)	Sandy red-brown, black surfaces; inclusions: abundant rounded quartz, main fraction <=0.1mm, occasional max of 0.6mm
3610	TIN 001 (*BE*, B)	GW1
4175	TWE 002	
4174	TWE 002 (B)	
1602	ZIN 001-003	
566	ZIN 001-003	
614	ZIN 109 (12)	Hard brown fabric; brown slip
3541	ZOU 002	Sandy red-brown, red inner surface, even matt black (Slip?) on outer surface; surfaces wiped and smoothed; inclusions: abundant rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, a little 0.2-0.5mm; sparse rounded lime, main fraction <=mm, occasional max of 0.3mm
3533	ZOU 002	Dark, lime rich liver coloured fabric
3541	ZOU 002	Sandy red-brown, red inner surface, even matt black (Slip?) on outer surface; surfaces wiped and smoothed; inclusions: abundant rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, a little 0.2-0.5mm; sparse rounded lime, main fraction <=mm, occasional max of 0.3mm

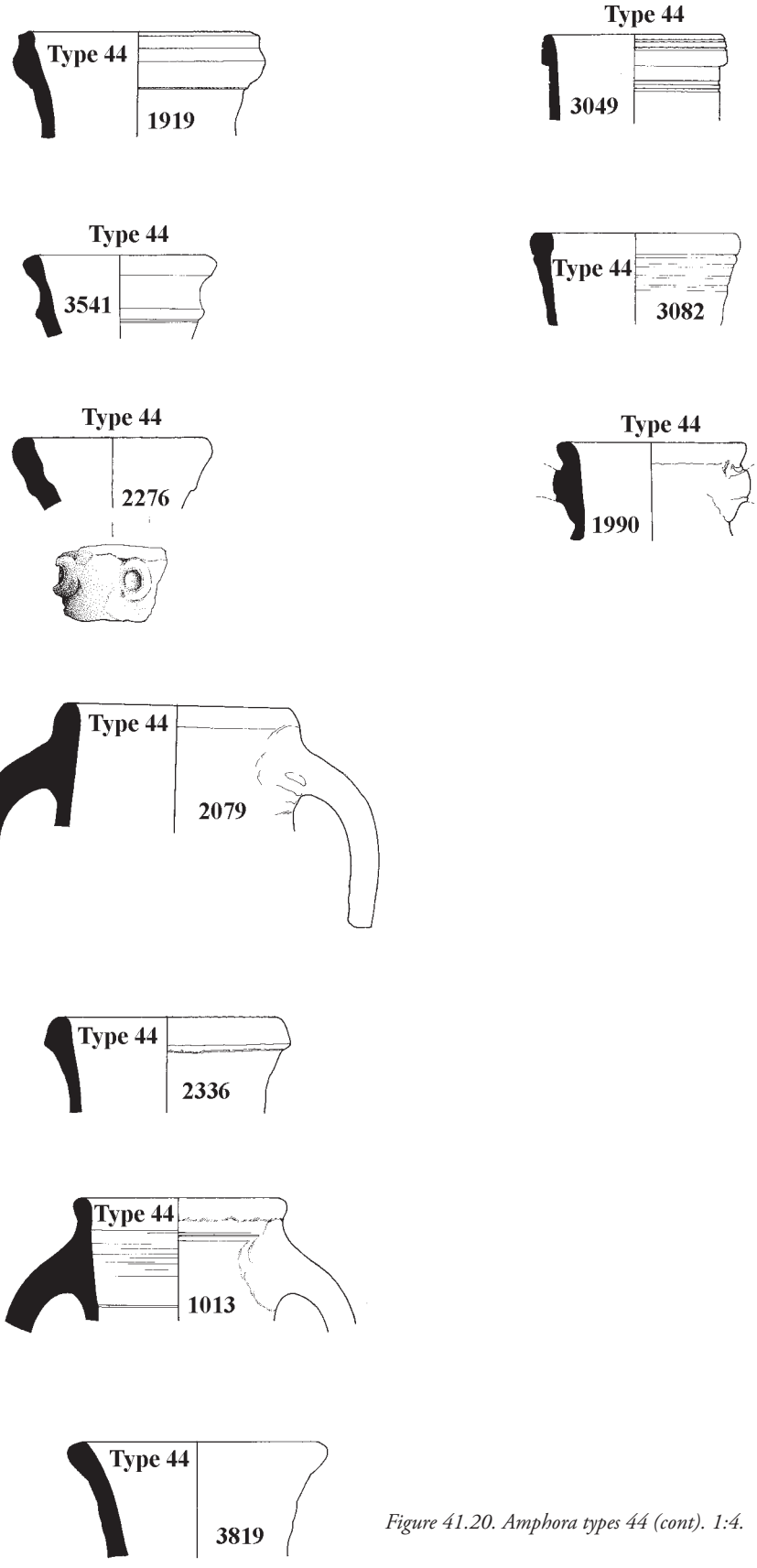


Figure 41.20. Amphora types 44 (cont). 1:4.

PART D. COARSEWARE

Types 101-106. Large Bowls

The superordinate type of which these can all be regarded as sub-types is a large, heavy bowl, not overly deep, with a body of gently curving sectional profile; the rim forms a broad, projecting, down-turned flange; the foot, in the few examples where it survives (see Type 103, 3020 and Type 104, 3021), is plain or carries a simple moulding. In types 101 and 102, the upper face of the rim flange carries a shallow, concave lid-locating facet on its back face which gives the rim the appearance of being articulated as two distinct elements. A distinction is made between type 101 which has this facet located below and behind the highest point of the rim, and type 102 where the location of the facet coincides with the highest point of the rim. Types 103 and 104 do not exhibit this lid-locating facet; a distinction is made between them on the basis of the concave shape of the upper surface of the rim in 103. Types 105 and 106 are represented by only a single vessel apiece; type 105 has a slight 'beak' at the heal of the rim; type 106 is very shallow with a plain rim.

The majority (75%) of the examples of these types occur at Tinda (TIN 001).

Parallels for types 101 and 102 occur at Sabratha (type 238 – probably residual in a context of the late 1st century BC), and in the levels associated with the residential insulae on the south slope of the Byrsa Hill at Carthage, which date from about the mid 3rd century BC to the destruction of 146 BC (see *Byrsa I and II*).

Type 101

CMD No	Context	Other Information
766	GER 001.3	
770	GER 001.3	
3702	TIN 001 (*B*, 17, s)	
3708	TIN 001 (*B*, 23, s)	
3682	TIN 001 (*B*,12, a)	
3663	TIN 001 (*A*)	
3617	TIN 001 (*BE*)	Dark sandy fabric
3708	TIN 001 (*BE*)	Dark fabric, white fill. Black on both surfaces
3582	TIN 001 (*BE*)	Flakey fabric, interior surface black, exterior surface red-brown

Type 102

CMD No	Context	Other Information
3834	TIN 001 (*A*)	Sandy fabric, some white flakes. Dark grey surfaces
3645	TIN 001 (*A*)	Red fabric, dark surface
3636	TIN 001 (*A*)	Dark core and dark surface
3690	TIN 001 (*B*, 15, G)	
3621	TIN 001 (*BE*)	Dark fabric, fill dark red

Type 103

CMD No	Context	Other Information
3021	FJJ 004	Blackish, partially misfired
3678	TIN 001 (*B*, 12, s)	
3675	TIN 001	Dark fabric, hard
3677	TIN 001 (*B*, 1, SF)	

Type 104

CMD No	Context	Other Information
3020	FJJ 002	
3238	GRE 001	
	GER 002 (60, s)	
1420	GER 002 (*D*, g)	Grey

Type 105

CMD No	Context	Other Information
1570	GSC 016	

Type 106

CMD No	Context	Other Information
1675	GSC 016	

Fabric: Many of the examples of these types are in a distinctive fabric which is close to that of Amphora Type 9. Sandy, occasionally gritty red-brown, smoothed black surfaces; inclusions: moderate, rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, a little 0.2-0.5mm; sparse, rounded lime, up to 0.5m.

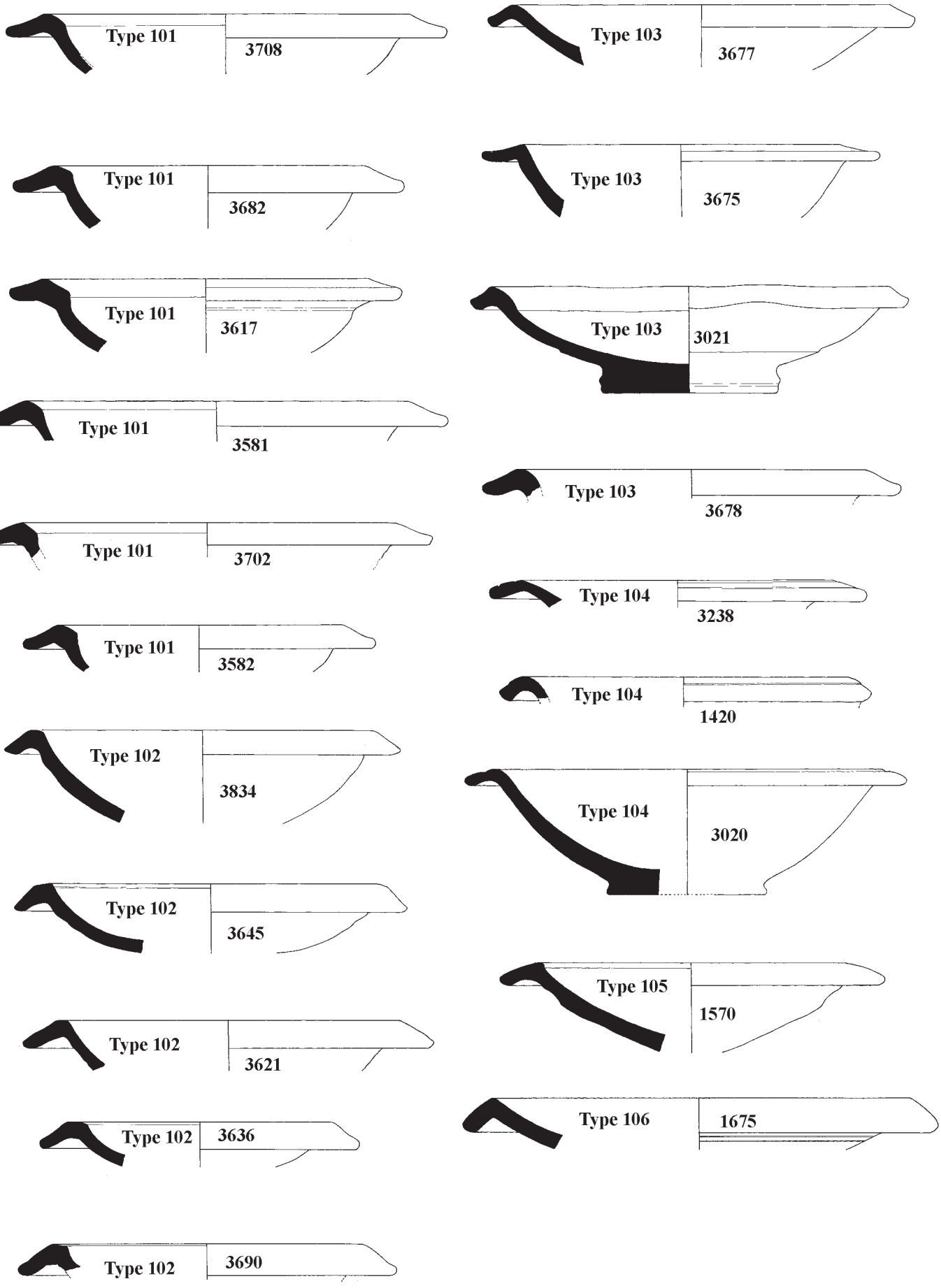


Figure 41.21. Coarseware types 101-106. 1:4.

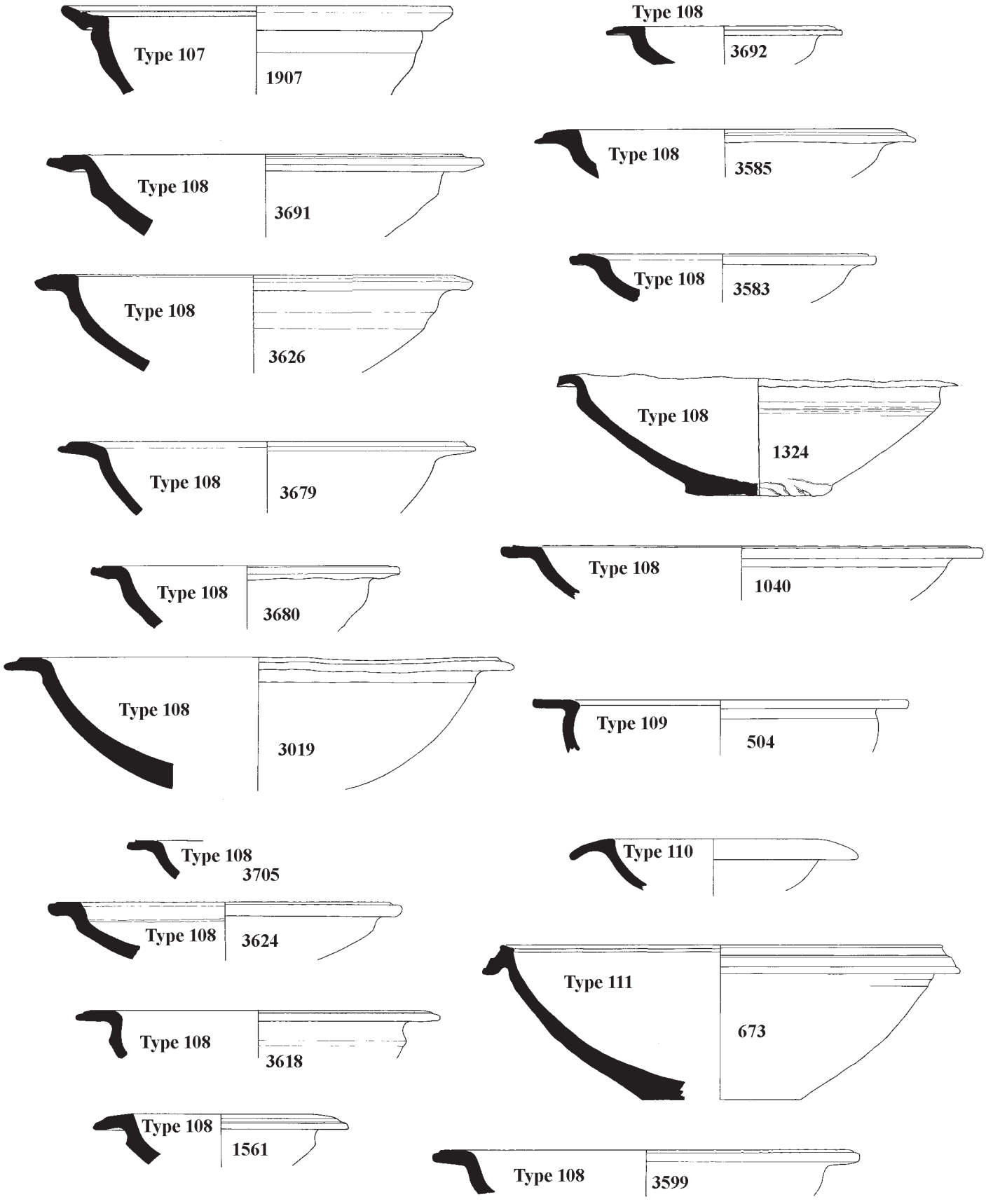


Figure 41.22. Coarseware types 107-111. 1:4.

Type 107. Large Bowl
The best general parallel for this vessel is a type of large basin which is common in the eastern Mediterranean and along the North African coast as far as Carthage in deposits of the latest 1st century BC and 1st century AD. See, for example, Benghazi ER Plain Ware 1 (Riley 1979), Sabratha Types 213-4, Carthage: Early Roman Buff Ware Basin Type 1 (Hayes 1976).

CMD No	Context	Other Information
1907	FUG 001	Dark grey fabric

Type 108. Large Bowl
A medium to large bowl. In the majority of examples, the upper and lower wall of the body are articulated as two distinct elements, the upper approximately vertical and the lower mostly taking the form of an inverted cone. In a few examples (3826 and 3019) the articulation is barely present. The rim forms a broad flange, usually approximately horizontal, whose lip carries a single rebate. The best parallels, in terms of the overall size and form of the vessels, are among the early Roman basins at Sabratha, particularly type 215 (Dore and Keay 1989).

CMD No	Context	Other Information
3680	TIN 001 (*B*, 12, s)	
3019	FJJ 003	Reddish surface
1324	GSC 008	Brick red fabric, hard metallic, more browny internal and external
1561	GSC 013	
3691	TIN 001 (*B*, 15, s)	
3692	TIN 001 (*B*, 15, s)	
3599	TIN 001 (*B*)	Dark fabric surface
3792	TIN 001 (*B*)	Red quartz
3705	TIN 001 (*B*)	Dark fabric, red inside, grey outside
3679	TIN 001 (*B*, 12, s)	
3618	TIN 001 (*BE*)	Dark fabric, red inside, greyish brown outside
3626	TIN 001 (*BE*)	Dark grey fabric, lighter slip traces
3585	TIN 001 (*BE*)	Reddish fabric, brownish surface
3583	TIN 001 (*BE*)	Dark fabric, light slip
3624	TIN 001 (*BE*)	Dark grey fabric, blackish surface, hard
1040 [DZ 222]	ZIN 119	Metallic hard grey with brownish surface

Fabric: Gritty grey-brown, grey surface with cream slip on outside; inclusions: abundant well-rounded quartz, main fraction <=0.2mm, some 0.3-0.5mm, occasional max of 3.5mm

Type 109. Large Bowl
Related to type 108?

CMD No	Context	Other Information
504	ZIN 109	Hard black self-coloured fabric

Type 110. Small Bowl
A finely-made small bowl with down-turned flange rim. The type is one of a series of similar small bowls identified at Sabratha as dating to 1st century BC – 1st century AD (Dore and Keay 1989, Types 207-212). It is closest to Sabratha Type 209 (for other examples see Dore 1992, no. 76, from Leptiminus; Arthur 1983, fig. 8, no. 72 and fig. 9, no. 88, from an assemblage of broadly similar date recovered from a site near Miṣurāta).

CMD No	Context	Other Information
	GER 002 (*5*)	

Fabric: Sandy cream, pinkish-brown core, greenish-cream outer surface; the rim-top is slipped and burnished; the remainder of the outer surface and under the flange is wiped but not slipped; the inner surface is abraded; inclusions: abundant, rounded quartz, main fraction <=0.1mm, a little 0.1-0.2mm; abundant rounded lime, main fraction <=0.1mm, a little 0.1-0.2mm.

Type 111. Large Bowl
A single example; bowl with downturned flange rim. Date possibly as types 107 and 108.

CMD No	Context	Other Information
673	TIN 001	Reddish fabric, sandy with white inclusions; dark surface

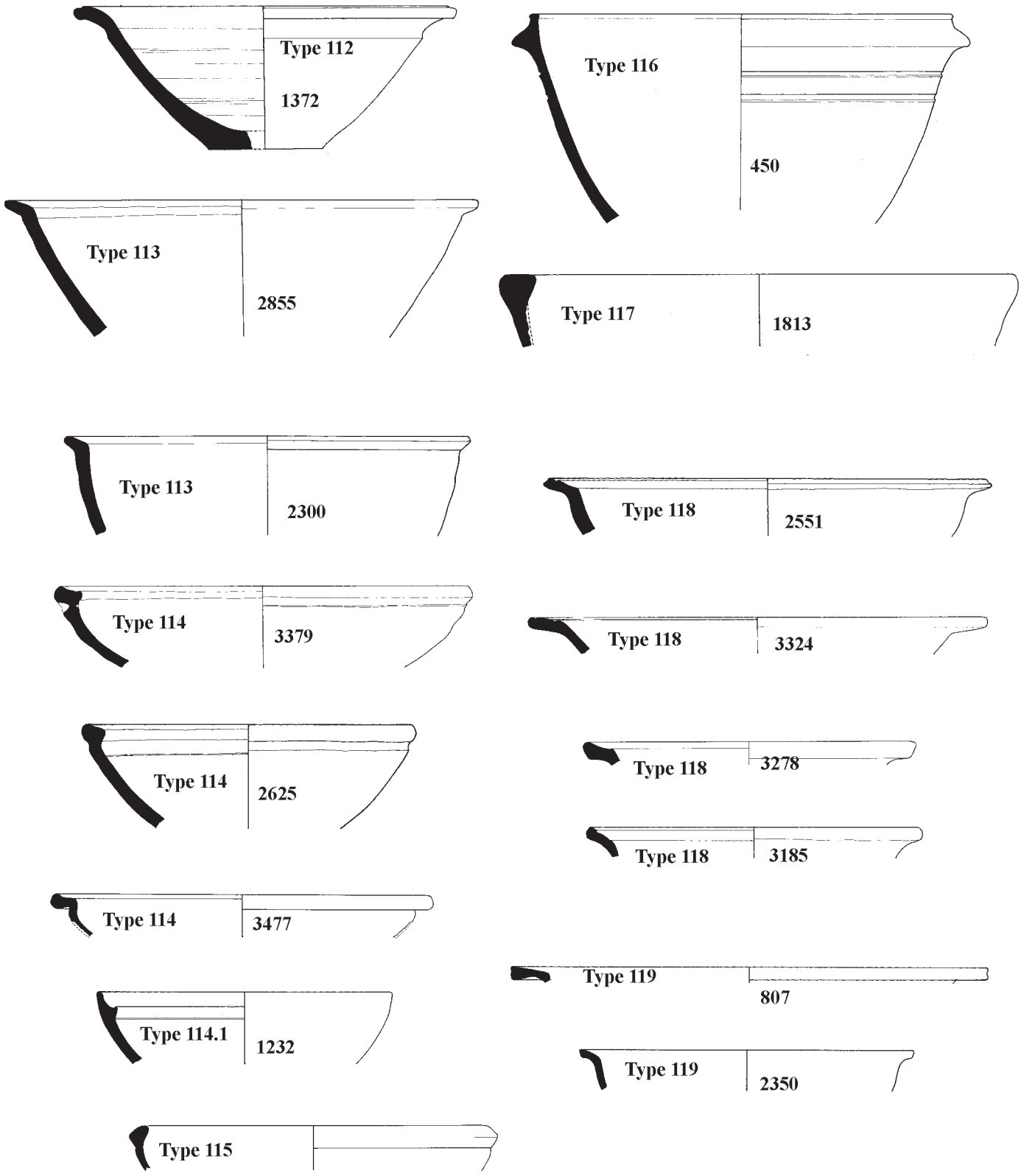


Figure 41.23. Coarseware types 112-119. 1:4.

Types 112 – 113. Large Bowls

Basin with up-tilted flange rim: in type 112 the rim is long and curved, in type 113 it is shorter and straight. The context of the two examples of Type 113 (Sāniat Jibrīl) can be dated on structural grounds to the late 2nd -3rd century AD.

Type 112

CMD No	Context	Other Information
1372	GSC 008 (1)	Hard, dull brown fabric with some white inclusions; dark purple surface
1546 [DZ 402]	ZIN 109	Hard metallic dark red with brownish surface

Type 113

CMD No	Context	Other Information
2300	GER 002 (*6*, 2)	
2855	GER 002 (*6*, 9)	Sandy dark grey, darker surfaces, burnished inner surface
2726	GRE 001 (C)	

Type 114 Medium Bowl

This type of medium-sized bowl with horizontal or uptilted flange rim is known to have been produced at Leptiminus (see Dore 1992, nos. 52-4). Late 2nd-4th centuries AD. One example (2625) comes from a context which can be assigned on structural grounds to the late 2nd-3rd century AD.

CMD No	Context	Other Information
3379	GER 002 (2, g)	
2625	GER 002 (*7*, 2)	
3477	ZOU 001 (G)	
2799	ZOU 002	

Fabric: Sandy orange-brown, reddish-brown core, dark grey outer surface; surfaces smoothed and burnished; inclusions: abundant rounded quartz, main fraction 0.1-0.2mm, some 0.2-0.5mm-1.5mm; sparse rounded lime, main fraction 0.1-0.3mm.

Type 115. Medium Bowl

A medium-sized bowl with inturned lip and moulded face. This type occurs in the Tripolitanian pre-desert (Dore 1996, no. 110) in contexts which suggest a date of *c.*2nd – 5th century AD. It may well be formally related to a series of bowls of mid-Roman date produced at Leptiminus (see Dore 1992, nos. 50-52). The fabric also is known in the pre-desert area (see particularly the examples of Casserole Type 77 from Wādī Umm al-Kharab – Dore 1996, no. 377).

CMD No	Context	Other Information
	GER 002 (*3*, 5))	

Fabric: Sandy dark grey brown with thin orange sub-surface margins and a banded grey and brown wet-hand-slipped surface brown surface; inclusions: moderate rounded quartz, main fraction <=0.1mm, some 0.5-1mm.

Type 116. Large Bowl

Miscellaneous large bowl.

CMD No	Context	Other Information
450	FJJ 004	Hard metallic fabric

Type 117. Large Bowl

Miscellaneous large bowl.

CMD No	Context	Other Information
1813	GER 001.4 (150)	Bl4. Phase 2

Types 118 – 124. Medium Bowls

The formal characteristics which unite these forms are their roughly hemi-spherical body shape and their uptilted flange rims. Types 118, 119 and 122 are quite finely made with a moulded upper face to the flange. Type 120 is shallower than the others – a dish rather than a bowl.

Type 118. Medium Bowl

These vessels are quite finely made with a moulded upper face to the flange. All the examples come from Sāniat Jibrīl (GER 002). No. 2551 is from a context of the later 2nd to 3rd century AD. Parallels are known from Sabratha (Dore and Keay 1989, 189, no. 198.3096 – from a poorly stratified context, and 193, no. 214.3911 from a homogenous group with a *TPQ* of *c.*10 BC from the Antonine Temple; also see Arthur 1983, fig. 6, no. 65, from Marsa Jazira near Miṣurāta; Sabratha type 207, Dore and Keay 1989).

CMD No	Context	Other Information
2551	GER 002 (*2*, 56)	
3324	GER 002 (121, s)	
3278	GER 002 (107, s)	
3185	GER 002 (46, s)	

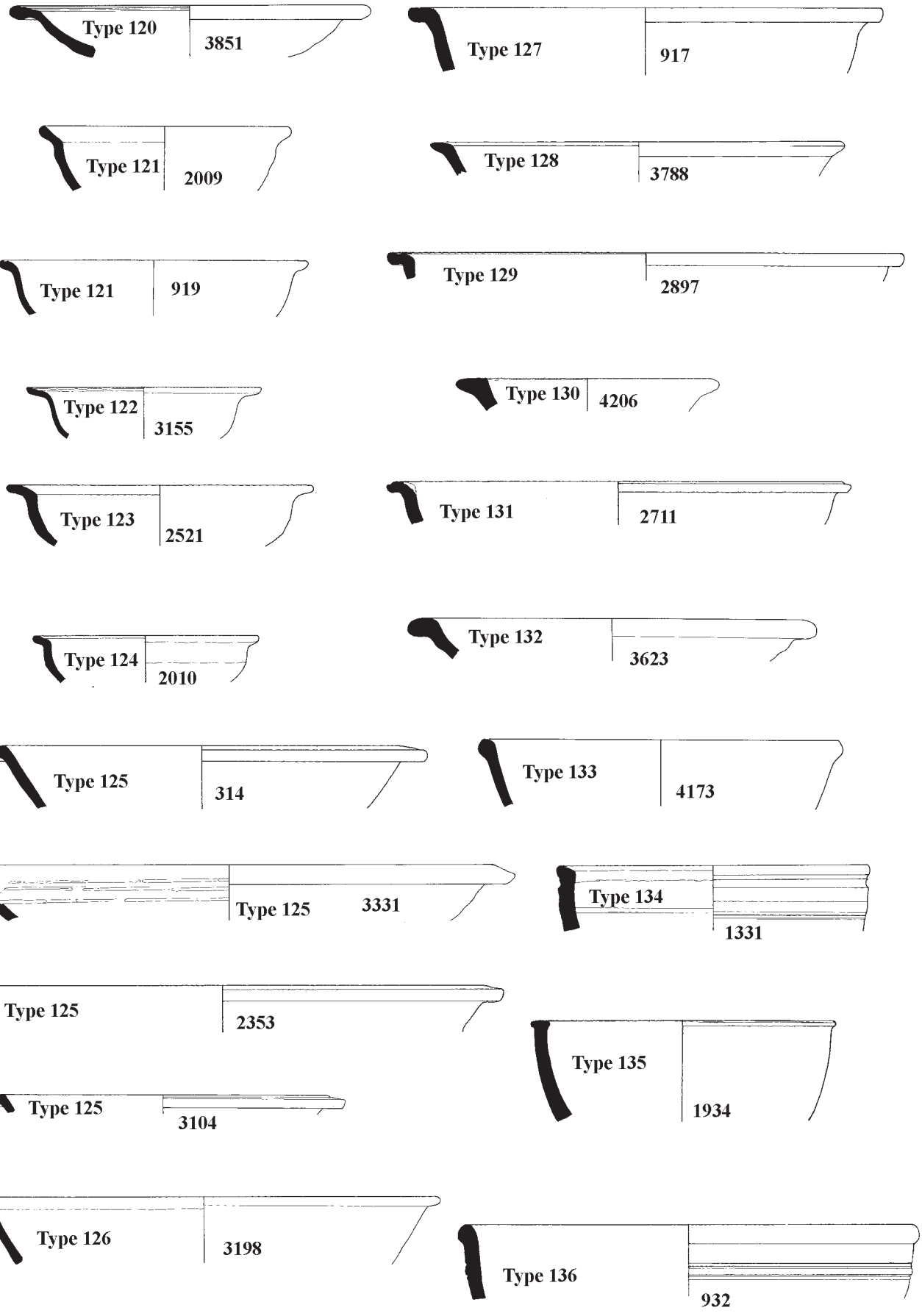


Figure 41.24. Coarseware types 120-136. 1:4.

Fabric: Fine red-brown, thin dark grey core, dark grey to black surfaces; surfaces smoothed; inclusions: moderate rounded quartz, main fraction <=0.1mm, occasional max of 0.2mm; sparse rounded lime, main fraction <=0.1mm, occasional max of 0.2mm.

Type 119. Medium Bowl
Similar to Type 118. The upper face of the rim flange is unmoulded. No. 807 is from a deposit likely to date to the late 2nd-3rd centuries AD. No. 2350 comes from a late 1st-early 2nd century deposit at Sāniat Jibrīl

CMD No	Context	Other Information
2350	GER 002 (*6*, 10)	Sandy grey-brown with smooth surface
807	GER 001.4 (19)	Grey burnished fabric

Type 120. Medium Bowl
A single example of a dish with a broad, uptilted flange rim, thickened at the lip.

CMD No	Context	Other Information
3851	GRE 001 (A)	Sandy fabric, light brown, dark surface

Type 121. Medium Bowl
Miscellaneous bowls with upturned flanges.

CMD No	Context	Other Information
2009	CHA 001	Hard dark grey fabric, almost black
919	GER 002 (g)	

Fabric: Sandy dark grey, dark purple outer surface; inner and outer surfaces burnished; inclusions: abundant rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm; sparse rounded lime, main fraction <=0.1mm, occasional max of 0.3mm.

Type 122. Medium Bowl
Miscellaneous bowl with upturned flange; the upper face of the flange is grooved.

CMD No	Context	Other Information
3155	GER 002 (30, s)	Grey fabric with white flecks.

Type 123. Medium Bowl
Miscellaneous bowl with upturned flange. This piece comes from a context likely to date to the later 2nd century AD.

CMD No	Context	Other Information
2521	GER 002 (*2*, 55)	

Fabric: Sandy dark grey-brown, greenish-cream slip or wash over the upper wall and rim; inclusions: abundant rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, a little 0.2-0.3mm, occasional max of 0.5mm; sparse rounded lime, 0.1-0.2mm; sparse rounded red iron-rich grains up to 0.5mm

Type 124. Medium Bowl
Miscellaneous bowl with upturned flange.

CMD No	Context	Other Information
2010	GER 002 (g)	Grey fabric with brown core and purplish grey-brown surface

Type 125. Medium Bowl
Bowl or dish with downturned flange rim. These appear to have been unslipped though they may be related to TRS (Hayes Form 2) or ARS (Hayes Form 58). All the examples are from Sāniat Jibrīl and 314 is from a context likely to date to the later 3rd or 4th centuries AD.

CMD No	Context	Other Information
3104	GER 002 (3, s)	
314	GER 002 (*4*, 2/1)	
3331	GER 002 (130, s)	

Fabric: Sandy dark grey or dark red.

Types 126 – 136. Large or Medium Bowls

Large- and medium-sized bowls with flange rims of varying lengths. This is a miscellaneous category, each type being represented by one example only.

Type 126. Large or Medium Bowl

CMD No	Context	Other Information
3198	GER 002 (52, s)	Brown fabric, black slip surface

Type 127. Large or Medium Bowl

CMD No	Context	Other Information
917	GER 002 (g)	

Fabric: Sandy dark grey with darker surfaces, once burnished.

Type 128. Large or Medium Bowl

CMD No	Context	Other Information
3788	RUG 003	'Quartz bowl'

Type 129. Large or Medium Bowl
This vessel comes from a context at Sāniat Jibrīl dating to the late 2nd-3rd centuries AD.

CMD No	Context	Other Information
2897	GER 002 (*4*, 48)	

Fabric: Sandy dark grey, orange-brown core, dark brownish-grey inner surface, dark grey outer surface showing the remains of a cream slip; inclusions: moderate, rounded quartz, main fraction 0.1-0.2mm, some 0.2-0.5mm, occasional max of 1mm.

Type 130. Large or Medium Bowl

CMD No	Context	Other Information
4206	FUG 009	Dark fabric, blackfiring outside

Type 131. Large or Medium Bowl

CMD No	Context	Other Information
2711	TIN 001	Brick red fabric, cream skin on outer surface

Type 132. Large or Medium Bowl

CMD No	Context	Other Information
3623	TIN 001 (*BE*)	Sandy dark fabric

Type 133. Large or Medium Bowl

CMD No	Context	Other Information
4173	TWE 002 (b)	Dark grey fabric

Type 134. Large or Medium Bowl

CMD No	Context	Other Information
1331	GSC 002	Metallic grey fabric with yellowish-cream slip on outer surface

Type 135. Large or Medium Bowl

CMD No	Context	Other Information
1934	GER 003 (106)	Sandy grey burnished fabric

Type 136. Large or Medium Bowl
It seems possible that the form of this type has been influenced by that of samian form Dr. 37. The vessel is from a context dating to phase 1 of Sāniat Jibrīl.

CMD No	Context	Other Information
932	GER 002 (1, 3)	Phase 1

Fabric: Sandy dark grey, with darker surfaces, once burnished.

Types 137 – 142: Medium and Small Bowls with Flange Rims.

Type 137. Medium or Small Bowl
The body of this type is generally of smoothly rounded sectional profile. The flange is plain and more or less horizontal. Vessel [3172] was examined in 2000 and although overfired appears to have born a slip. Apart from one vessel (3531 from ZOU 002) all examples of the type are from Sāniat Jibrīl. Vessel [169] comes from a late 1st-2nd century deposit. The type occurs at Sabratha (Type 165), though not in great quantity, with one example occurring in a deposit dating to the first half of the 1st century AD.

CMD No	Context	Other Information
3156	GER 002 (30, s);	
169	GER 002 (3, 3/1)	
3350	GER 002 (8, 1)	
3172	GER 002 (42)	
3197	GER 002 (52, s)	
3271	GER 002 (63, s)	
2995	GER 002 (g)	
3531	ZOU 002	

Fabric: Apart from [3172], the fabric is as follows: sandy orange-brown or occasionally grey, with dark grey surfaces; the outer surface is covered with a cream-coloured slip or wash; inclusions: moderate rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, occasionally up to 0.5mm; sparse rounded lime, occasional max of 0.5mm

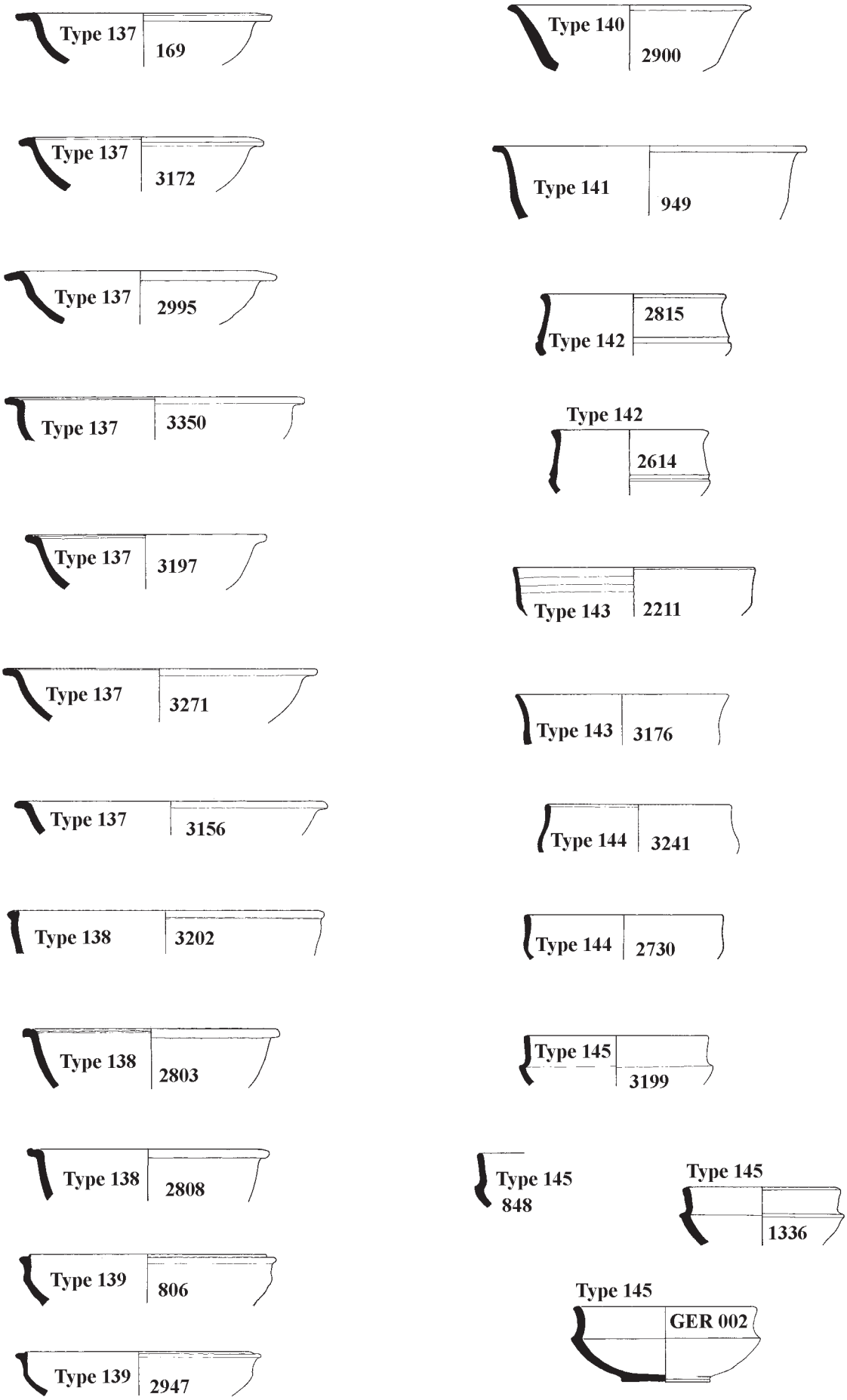


Figure 41.25. Coarseware types 137-145. 1:4.

Type 138. Medium or Small Bowl
This type has a similar general shape to 137 though the flange is generally much shorter. All examples are from Sāniat Jibrīl. Vessel 2803 is from a context dating to the late 1st – early 2nd century AD.

CMD No	Context	Other Information
3202	GER 002 (53, s)	
2803	GER 002 (6, 21)	
2808	GER 002 (2, 73)	

Fabric: As type 137.

Type 139. Medium or Small Bowl
Small bowls with a carinated body and a bead and flange rim. Both examples come from late 2nd-3rd century contexts. A similar form is known in the pre-desert area (Dore 1996, Type 108) where it occurs in contexts which are likely to be between the 1st and the 4th centuries AD. The fabric is also known in the pre-desert area (see particularly the examples of Casserole Type 77 from Wādī Umm al-Kharab – Dore 1996, 377).

CMD No	Context	Other Information
806	GER 001.4 (19)	
2947	GER 002 (4, 65)	

Fabric: Sandy dark grey-brown with thin orange margins and banded grey and brown surfaces; smoothed surfaces; inclusions: moderate rounded quartz, main fraction <=0.1mm, some 0.5-1mm.

Type 140. Medium or Small Bowl
Carinated bowl with short flange rim. The form bears a striking resemblance to a late Italian sigillata form (*Conspectus Formarum* 3.2) which occurs in quantity in the tombs of Sāniat bin Huwaydī (see Fineware Type 515) and is popular in the pre-desert area (see Dore 1996: 323), but it is in a coarseware fabric. The piece comes from a late 1st century – early 2nd century context at Sāniat Jibrīl.

CMD No	Context	Other Information
2900	GER 002 (2, 76)	

Fabric: Sandy dark grey with banded orange and grey surfaces; smoothed surfaces; inclusions: moderate rounded quartz, main fraction <=0.1mm, some 0.5-1mm.

Type 141. Medium or Small Bowl
Similar to type 132 with slightly longer flange. The single example comes from a deposit of the late 1st – early 2nd century AD at Sāniat Jibrīl.

CMD No	Context	Other Information
949	GER 002 (3, 5)	Hard, light grey fabric

Type 142. Medium or Small Bowl
Small carinated bowl with short flange rim. Vessel 2815 comes from a context of the late 1st – early 2nd century AD. A similar vessel occurs at Sabratha (Dore and Keay 1989, Type 172) in a deposit of the late 2nd century AD.

CMD No	Context	Other Information
2815	GER 002 (2, 86)	
2614	GER 002 (4, 92)	

Fabric: Sandy orange-brown, dark grey surfaces with a cream wash or slip over the outer surface; inclusions: moderate rounded quartz, main fraction <=0.1mm, some up to 0.5mm; sparse rounded lime, max of 0.5mm.

Types 143 – 145: Small Carinated Bowls with Plain Rims

Type 143. Small Bowl
The type is known at Sabratha (Dore and Keay 1989, Type 144) and in the pre-desert (Dore 1996, Type 122), though in the latter case usually in a finer red fabric. A case was made for dating the pre-desert type to the 4th century AD (Dore 1996, 386) whereas at least one of the Fazzān examples (2211) is likely to come from an earlier context (late 2nd-3rd century AD).

CMD No	Context	Other Information
2211	GER 002 (7, 2)	
3176	GER 002 (44, s)	

Fabric: Sandy dark grey, with darker slipped and burnished surfaces; inclusions: abundant rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, occasional max of 0.5mm

Type 144. Small Bowl
Similar to 143 though more restricted above the carination.

CMD No	Context	Other Information
3241	GER 002 (61, s)	
2730	GER 002 (g)	

Fabric: Sandy dark grey-brown with thin orange margins and banded grey and brown surfaces; smoothed surfaces; inclusions: moderate rounded quartz, main fraction <=0.1mm, some 0.5-1mm.

Type 145. Small Bowl
This type may well have no formal connection with the previous two. It has a pronounced rebate above the carination and a generally upright upper wall. The type occurs in the pre-desert area (Dore 1996, Type 116) where one example was from a midden associated with a *qasr* (Mm 10) whose construction could be dated to after *c.*AD 200. Vessel [848] comes from a late 2nd- to 3rd-century context.

CMD No	Context	Other Information
3199	GER 002 (52, s)	
848	GER 001.4 (16)	
1336	GSC 002	
3343	GER 002	

Fabric: Sandy orange-brown with dark grey surface; white slipped band on the edge of the carination; traces of red ochre in the groove above the footring (vessel 3343); Sandy dark grey, with darker slipped and burnished surfaces (vessel 848); inclusions: abundant rounded quartz, main fraction <=0.2mm, max 0.5mm; some lime.

Type 146. Miscellaneous Bowl
Miscellaneous bowl imitating a glass form.

CMD No	Context	Other Information
133	ZIN 022 (South)	Fabric unknown

Types 147, 148, 149, 150, 151: Large and Medium Bowls and Dishes with Plain Rims

Type 147. Large Bowl
The fabric is essentially an unslipped version of Tripolitanian Red Slip Ware (Hayes 1972, 304 ff.). The form (not dissimilar to TRS form 2) and certain features of its manufacture, the cut-away base and the use of knife-trimming on the upper part of the exterior wall, also suggest a relationship with that ware.

CMD No	Context	Other Information
3745	RUG 003	Hard metallic. Brownish sandy fabric; dark brown inner, blue green outside

Type 148. Large Bowl

CMD No	Context	Other Information
1961	GER 003 (160)	Sandy red-brown with grey core

Type 149. Medium Bowl
Bowl with plain, inturned lip. The formal characteristics of this type are extremely long-lived and thus not closely datable. At Berenice, Riley regards the form as 'essentially and primarily Hellenistic' (Riley 1979, 283: Hellenstic Plain Ware 4), though he notes that the general form was still being produced in a kiln at Tocra in the 3rd century AD. In the pre-desert area the form is likely to be a member of a coarseware series produced in parallel to Tripolitanian Red Slip Ware and to date to the 3rd century AD and later (see Dore 1996, Types 134-7).

CMD No	Context	Other Information
3164	GER 002 (33, s)	
3579	TIN 001 (*B*)	

Fabric: Sandy orange-brown with dark grey surfaces; outer surface smoothed and burnished; inclusions: moderate rounded quartz, main fraction 0.1-0.2mm, some 0.2-0.5mm, occasional max of 1mm.

Type 150. Medium Bowl
Bowl with plain, inturned lip. See remarks on type 146.

CMD No	Context	Other Information
2108	GER 003 (211)	Fabric unknown

Type 151. Medium Bowl
Bowl with plain, slightly inturned lip. The more open form of this type would suggest affinities with African and Tripolitanian Red Slip Ware types. Close parallels are known in the pre-desert area (Dore 1996, 385, Types 134 and 137). 3rd century AD or later.

CMD No	Context	Other Information
2904	CHA 001	
	GER 002 (7, 77)	Sandy, dark red
1213	GSC 008	Hard, dark red fabric, grey surface

Types 156 - 164: Medium and Small Bowls with Plain Rims

Type 156. Medium Bowl

CMD No	Context	Other Information
1562	GSC 015	

Fabric: Sandy dark grey-brown with thin orange margins and banded grey and brown surfaces; smoothed surfaces; inclusions: moderate rounded quartz, main fraction <=0.1mm, some 0.5-1mm.

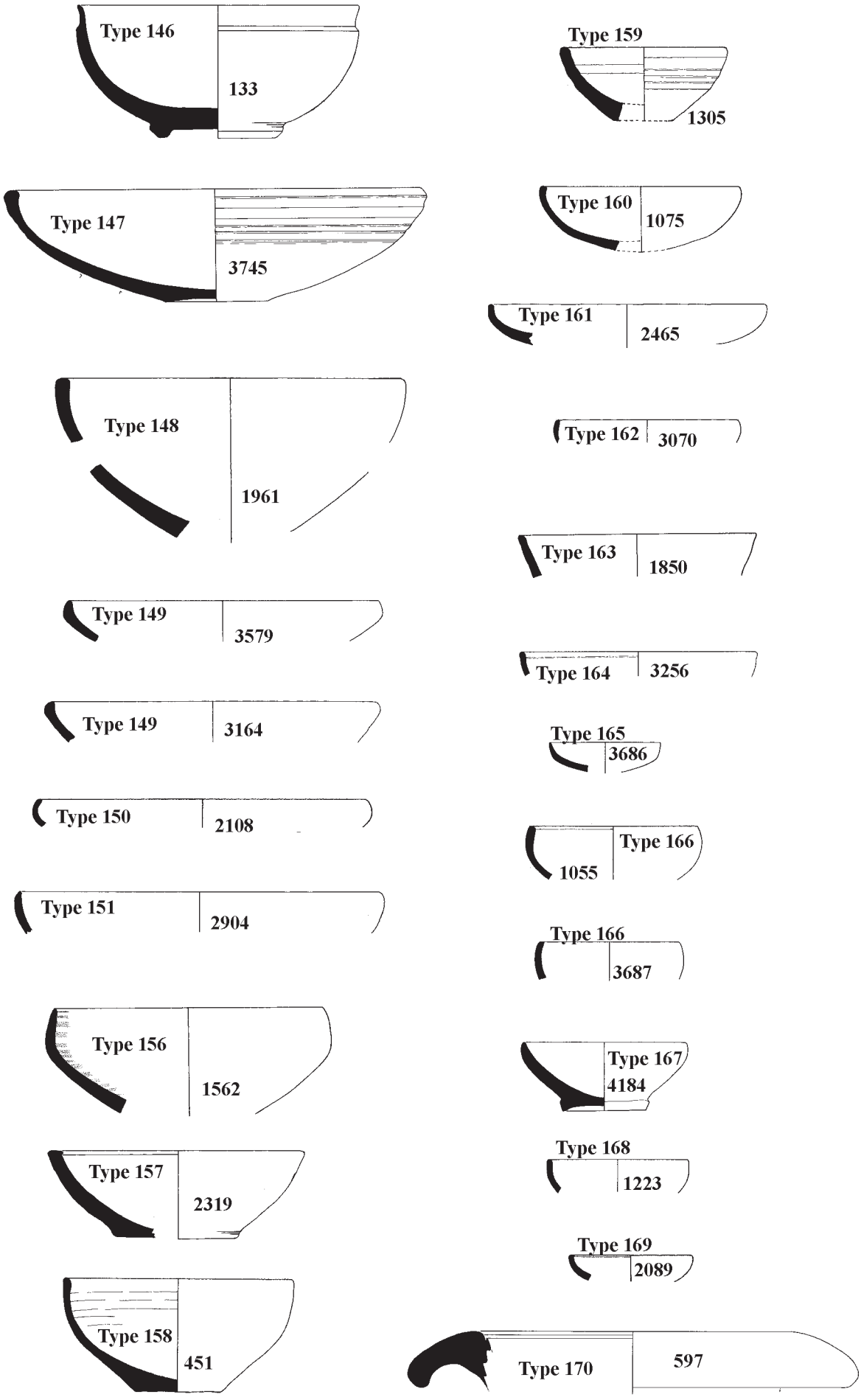


Figure 41.26. Coarseware types 146-170. 1:4.

Type 157. Medium Bowl
Miscellaneous bowl. The single example is from a context dating to the later 2nd – 3rd century AD.

CMD No	Context	Other Information
2319	GER 002 (*6*, 2)	Sandy dark grey, with darker surfaces; inner surface once burnished

Type 158. Medium Bowl
Miscellaneous bowl.

CMD No	Context	Other Information
451	FJJ 004	Reddish sandy brown fabric, smoothed, no slip

Type 159. Small Bowl
Miscellaneous bowl.

CMD No	Context	Other Information
1305	GSC 002	Hard brown fabric, with black outer surface

Type 160. Small Bowl
Miscellaneous bowl.

CMD No	Context	Other Information
1075	GSC 008	Red fabric, black inside

Type 161. Small Bowl
Miscellaneous bowl. Vessel [2465] is from a context dating to the later 2nd-3rd century AD at Sāniat Jibrīl.

CMD No	Context	Other Information
1983	CHA 001	
2465	GER 002 (*2*, 33)	Sandy brown with darker surface

Type 162. Small Bowl
Miscellaneous bowl. The single example is from a context possibly dating to the early 4th century AD.

CMD No	Context	Other Information
3070	GER 002	Unslipped sandy red

Type 163. Small Bowl
Miscellaneous bowl.

CMD No	Context	Other Information
1850	GER 001.3 (1)	Unslipped reddish-brown with grey core

Type 164. Small Bowl
Miscellaneous bowl.

CMD No	Context	Other Information
3256	GER 002 (69, s)	Sandy dark grey, with darker surfaces; inner surface once burnished

Types 165, 166, 167, 168, 169: Small bowls or cups with plain rim

Most of these vessels have been re-examined and are known to be coarseware.

Type 165. Small Bowl or Cup

CMD No	Context	Other Information
3686	TIN 001 (*B*)	Dark fabric

Type 166. Small Bowl

CMD No	Context	Other Information
1055	GSC 008	Sandy reddish-buff fabric, smooth surface
3687	TIN 001 (*B*)	Dark fabric

Type 167. Small Bowl or Cup

CMD No	Context	Other Information
4184	GSC 020	Hard buff fabric, darker brown outer surface

Type 168. Small Bowl or Cup

CMD No	Context	Other Information
1223	GSC 008	Dark brown fabric, grey outer surface, almost black inner

Type 169. Small Bowl or Cup

CMD No	Context	Other Information
2089	GER 001.4 (211)	Fabric unknown

Mortarium

Type 170. Mortarium

CMD No	Context	Other Information
597	ZIN 109 (10)	

Fabric: Gritty, dull pinkish-brown, smoothed surfaces; inclusions: abundant, angular quartz, main fraction 0.5-1mm; moderate angular rock fragments, main fraction <=2mm; abundant angular black vitreous grains, main fraction <=2mm; abundant, rounded quartz, main fraction <=0.2mm.

Casseroles, Basins and Jars

Type 171. Casserole
This type has a general similarity to Sabratha types 33 and 34 (Dore and Keay 1989) indicating a date range of 3rd century BC to 1st century AD.

CMD No	Context	Other Information
3150	GER 002 (29, s)	
3207	GER 002 (54, s)	

Fabric: Sandy dark grey, with darker surfaces; burnished outer surface.

Type 171.1. Casserole
See Sabratha Type 15 (Dore and Keay, 1989). 1st century AD.

CMD No	Context	Other Information
2084	GER 001.5/6/7	

Type 172. Casserole
See Sabratha Type 46 (Dore and Keay 1989). Late 1st-3rd century AD.

CMD No	Context	Other Information
3969	GER 001.5/6/7	

Type 173. Casserole
This type seems to constitute the principal casserole type in use in central and southern Tunisia and Tripolitania during the mid-Roman period. It was almost certainly produced at, or in the immediate vicinity of, Leptiminus (see Dore 1992, Type 13), and also at kilns sites in Tripolitania, on the evidence of Sidi al-Sid (Arthur 1982). The type occurs in quantity at Sabratha (Dore 1989, Types 58-60) where it appears in the second half of the 2nd century AD and continues throughout the 3rd and 4th centuries. It also occurs in the pre-desert area (Dore 1996, Types 62-4) in association with fineware which confirms a starting date in the 2nd century AD.

CMD No	Context	Other Information
3292	GER 002 (112, s)	
3103	GER 002 (3, s)	
3252	GER 002 (63, s)	
3194	GER 002 (51, s)	

Fabric: Sandy red-brown, with red inner surface and dark grey outer surface; the outer surface is covered with a cream-brown slip and finished with narrow burnished horizontal bands; inclusions: abundant rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, a little 0.2-0.5mm, occasional max of 1mm; sparse rounded lime, main fraction <=0.2mm, occasional max of 0.5

Type 174. Casserole
Variant of type 174.

CMD No	Context	Other Information
1823	GER 001.3 (15)	R8 sandy red

Type 175. Casserole
Finer, thin-walled version of casserole type 173. Occurs at Sabratha (Dore and Keay 1989, Type 65) and in the pre-desert (Dore 1996, Type 68). Its distribution suggests that it was produced in Tripolitania. The evidence from Sabratha and the pre-desert suggests that the type started being produced in the 3rd century AD and continued at least into the 5th century.

CMD No	Context	Other Information
947	GER 002 (2, 5)	R7
3873	GRE 001	Dark fabric, sandy, hard

Type 176. Casserole
The classic northern Tunisian casserole form (see Hayes 1972, Form 197) which started in the later 2nd century AD and continued, with some evolution, until the early 5th century. The fabric of both these pieces is that known, after Hayes, as African Black Top Ware (Hayes 1976, 87).

CMD No	Context	Other Information
2426	GER 002 (4, 49)	
2227	GER 002 (7, 2)	

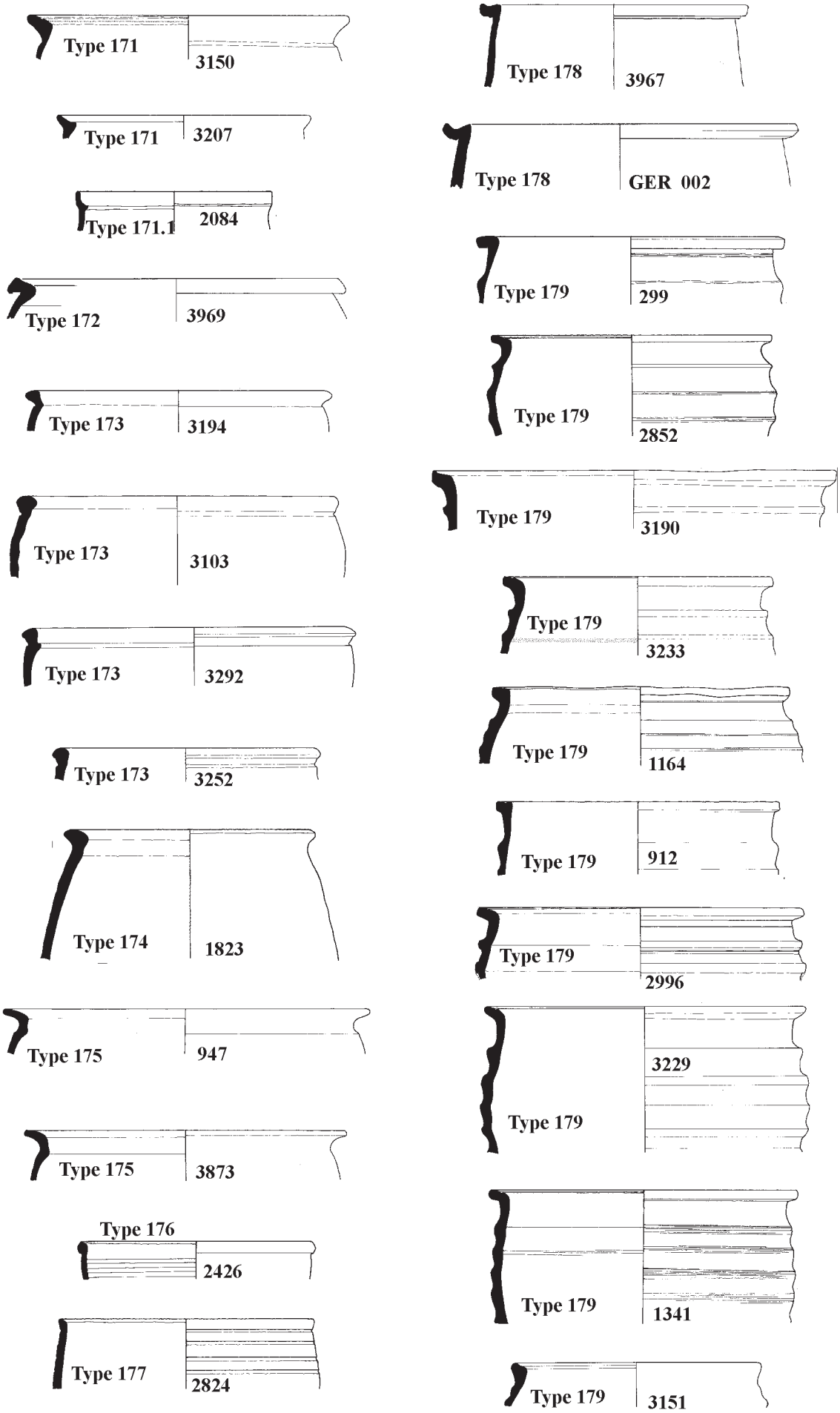


Figure 41.27. Coarseware types 171-179. 1:4.

Type 177. Casserole
Related to type 176 but quite probably slightly earlier. See Sabratha Type 55 (Dore and Keay 1989). The fabric is similar to African Black Top Ware.

CMD No	Context	Other Information
2824	GER 002 (*6*, 24)	

Fabric: Sandy orange-brown, with dark grey surfaces; thin horizontal wet-burnished bands on the outer surface; inclusions: moderate rounded quartz, main fraction 0.1-0.2mm, occasional max of 1mm.

Type 178. Casserole
Casserole with upturned (that is, lid-locating) flange rim. This type is common in Cyrenaica (Benghazi (Berenice) MR Cooking Ware 1) where a kiln site is known at Tocra. Riley (1979) dates its introduction at Berenice to the end of the 1st or beginning of the 2nd century AD, and it seems to have lasted there until the 5th century AD. The type also occurs at Bū Nijīm where it was the principal casserole form (Rebuffat *et al.* 1970) and in the pre-desert (Dore 1996, Type 67). The pre-desert area and Jarma seem to mark the westernmost limit of the type's distribution.

CMD No	Context	Other Information
3967	GER 001.5/6/7	
	GER 002 (D, g)	

Fabric: Fine, dark reddish-brown with red-brown inner surface and dark grey outer surface; the surfaces are smoothed; inclusions: moderate rounded quartz <=0.2mm.

Type 179. Casserole
A distinctive, deep casserole whose walls are covered with parallel, equally spaced horizontal ridges. The rim consists, for the most part, of a simple, slightly uptilted flange which, in some examples, is slightly relieved to form a lid-locator, though examples are known with a bead and flange rim (GER 001, G1, 924 – mud-brick packing, phase 7). Within the Wādī al-Ajāl, the type appears to be restricted to Jarma and its immediate environs (GSC 002 and 003). No close parallels are at present known outside the region, though it may be noted that horizontal ridging as a general decorative technique is a characteristic of mid-Roman cooking wares at Berenice (Riley 1979, fig. 104). The fabric suggests an origin within the region and it may well be that the type was produced in the locality.

CMD No	Context	Other Information
3151	GER 002 (29, s)	
299	GER 002 (*1*, 4)	Phase 1
3190	GER 002 (48, s)	
3229	GER 002 (59, s)	
912	GER 002 (g)	
2996	GER 002 (g)	
3233	GER 002 (60, s)	
2852	GER 002 (I, 9)	Phase 2
1341	GSC 002	
1164	GSC 003	

Fabric: Sandy orange-brown, with dark grey surfaces; horizontal wet-burnished bands on the outer surface; inclusions: moderate rounded quartz, main fraction 0.1-0.2mm, occasional max of 1mm.

Type 179.1. Casserole
This is an example of the most commonly occurring casserole type in the Tripolitanian pre-desert. The fabric is likely to be a coarser version of Tripolitanian Red Slip Ware (see Dore 1996, Types 69-72, and p. 374 for a discussion of the dating evidence). 4th – 5th centuries AD (and possibly later).

CMD No	Context	Other Information
422	GER 001 (5)	Sandy red

Types 180-186. Deep Casseroles

The superordinate type of which 180-186 are all variants is a deep casserole or basin with a more or less upright upper wall. Types 180 and 181 are distinguished by rims with a lid-locator in their back face; type 180 has a short flange rim of angular sectional profile, type 181 a shorter rim of more amorphous profile. The rim of type 183 has a barely articulated flange and a single groove cut in its top edge.

Within Wādī al-Ajāl, the majority of recorded occurrences are at Sāniat Jibrīl (GER 002) where four examples were recovered from contexts of Phase 1. Single examples are also recorded from TWE 015 and GBD 001. A vessel of similar form is known from Sabratha (Dore and Keay 1989, fig. 49, no. 188), where it occurs in a context with a likely date range 2nd century BC-early 1st century AD.

Fabric: This is usually a sandy dark grey, less often orange-brown or red-brown. Grey examples sometimes have an orange-brown core. The surfaces are mostly dark grey. The treatment of the outer surface varies. Some examples show the remains of a cream slip, though it may well be that many examples were once treated in this way. Many examples, whether slipped or not, have their outer surface burnished in narrow, horizontal, parallel bands. Occasional examples have a good burnish on both their

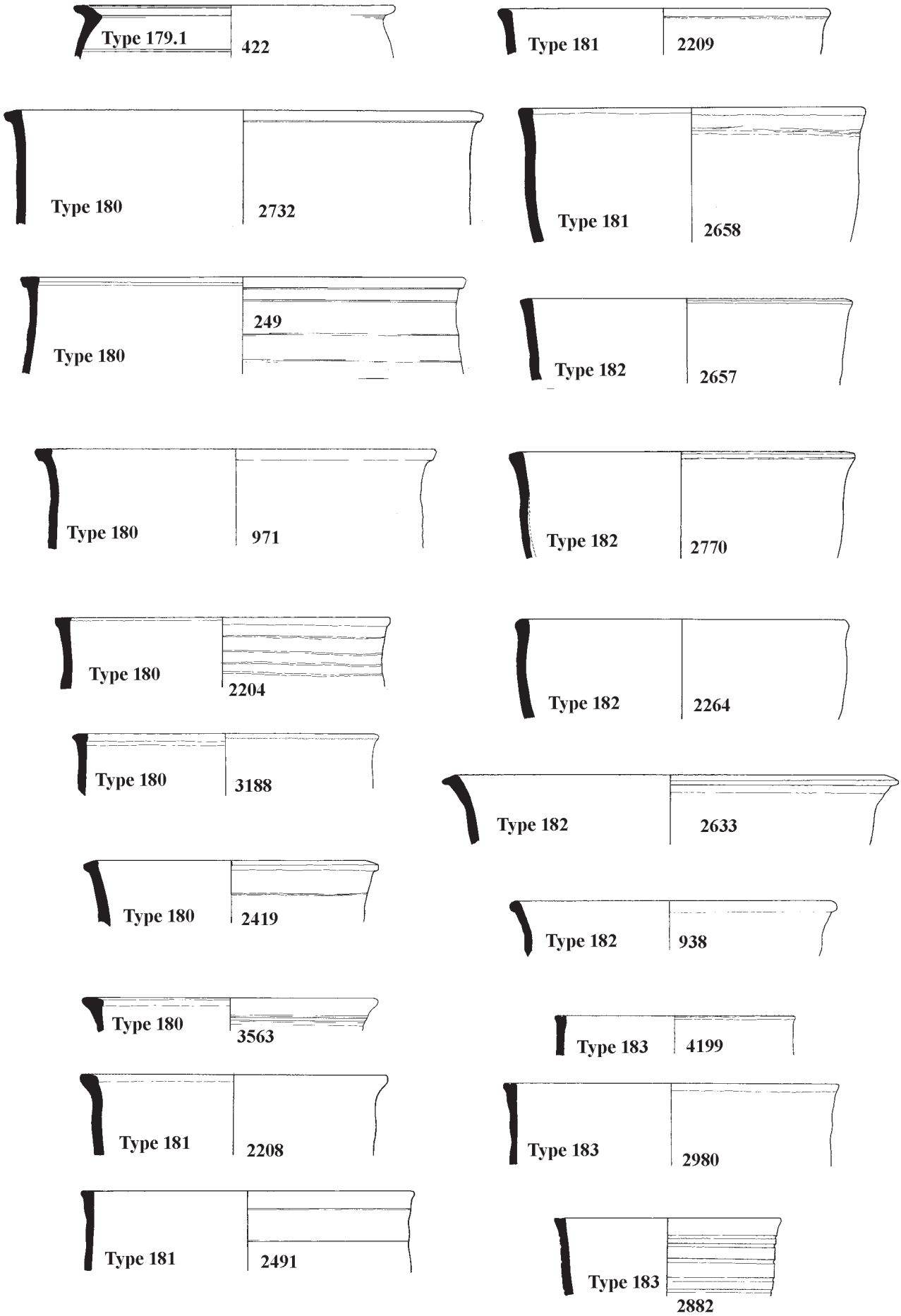


Figure 41.28. Coarseware types 179.1-183. 1:4.

inner and outer surfaces and the quality of this is such as to suggest that they may have been slipped before burnishing. The appearance of this particular fabric variant is very close to Tripolitanian Red Slip Ware. A single example with a red-brown fabric has an even, matt black smoothed and slipped surface. Inclusions: abundant rounded quartz, main fraction <=0.2, some 0.2-0.5, occasional grains up to 1.0mm. Some examples have sparse grains of rounded limestone up to 0.3mm.

Type 180. Casserole or Basin

CMD No	Context	Other Information
3563	GBD 001	
2419	GER 002 (*4*, 18)	
971	GER 002 (*4*, 4/1)	
2204	GER 002 (*6*, 1)	
249	GER 002 (4, s)	
3188	GER 002 (118, s)	
2732	GER 002 (g)	

Type 181. Casserole or Basin

CMD No	Context	Other Information
2209	GER 002 (*4*, 10)	
2658	GER 002 (*6*, 9)	
2491	GER 002 (*2*, 29)	Phase 3
2208	GER 002 (*4*, 10)	

Type 182. Casserole or Basin

CMD No	Context	Other Information
938	GER 002 (*1*, 2)	Phase 1
2657	GER 002 (*6*, 9)	Phase 2
2264	GER 002 (*4*, 11)	
2770	GER 002 (*6*, 24)	Phase 1
2633	GER 002 (*6*, 12)	Phase 1

Type 183. Casserole or Basin

CMD No	Context	Other Information
2980	GER 002 (*7*, 29)	Phase 3
2882	GER 002 (*6*, 24)	Phase 1
4199	TWE 015	

Type 184. Casserole or Basin

CMD No	Context	Other Information
2802	GER 002 (*6* , 23)	Phase 1

Type 185. Casserole or Basin

CMD No	Context	Other Information
3158	GER 002 (30, s)	

Type 186. Casserole or Basin

CMD No	Context	Other Information
3203	GER 002 (54, s)	

Type 187. Casserole or Large Bowl
Casserole or large bowl, moulded rim. Single example.

CMD No	Context	Other Information
3162	GER 002 (32, s)	Light brown with grey core and darker surface

Type 188. Casserole or Large Bowl
Casserole or large bowl. Single example.

CMD No	Context	Other Information
2200	GER 002 (*4*, 10)	

Type 189. Casserole
Casserole or deep bowl with thickened rim. Single example. Examples of this type have been noted at Leptiminus from undated field survey contexts (the precise type has not been published, though a similar type appeared in Dore 1992, no. 20) and may have been manufactured there (though it does not appear in any of the groups published by Peacock *et al.* (1989 and 1990). A very similar type occurs at Carthage (Fulford and Peacock 1984, Type 13) and is thought to have been produced in the Cathage-Nabeul region (Fulford and Peacock 1984, Type 14). The type appears in contexts at Cathage dated to the second half of the 6th century AD.

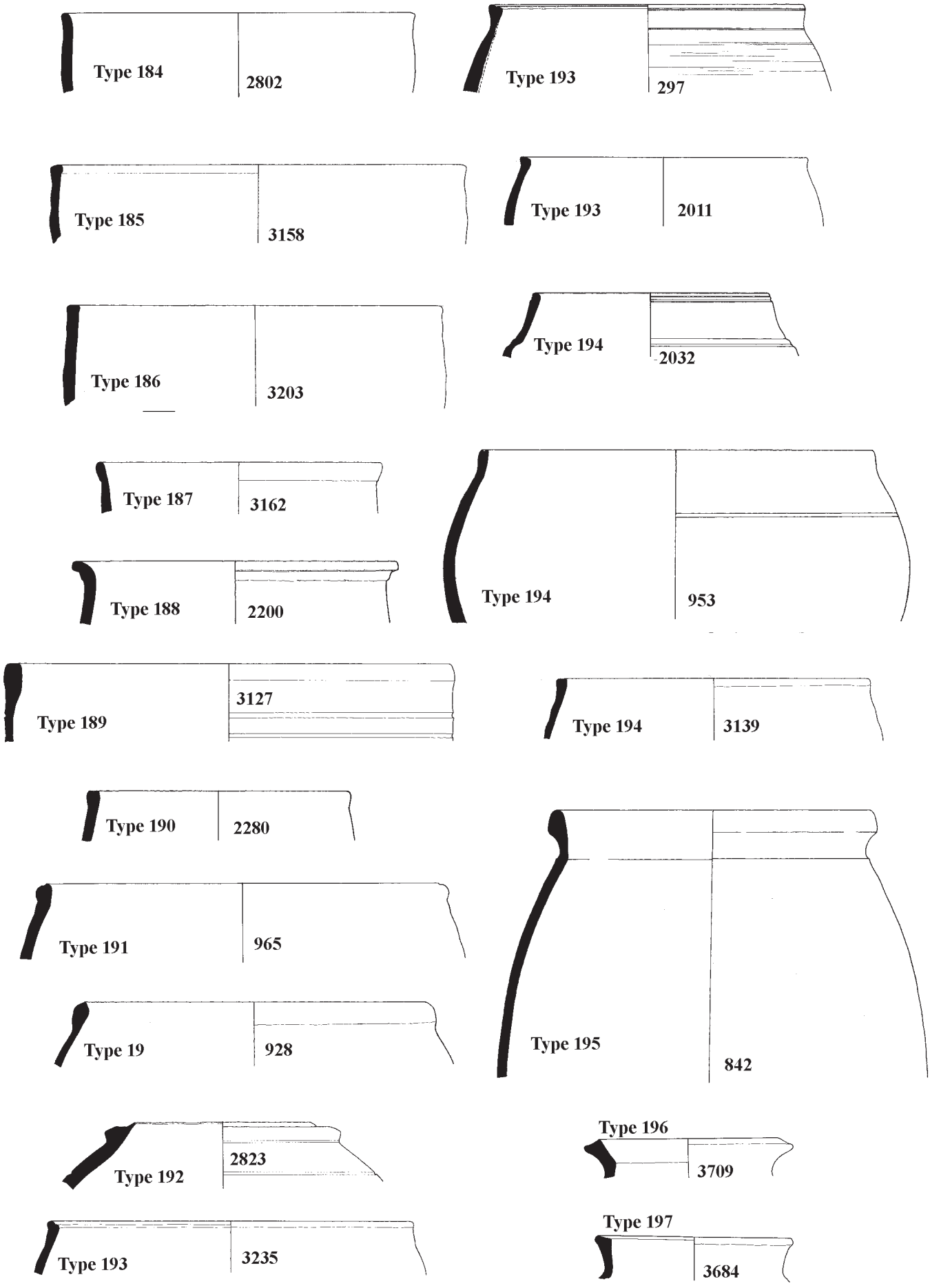


Figure 41.29. Coarseware types 184-197. 1:4.

CMD No	Context	Other Information
3127	GER 002 (24, s)	Sandy red with dark slip

Types 190 – 194. Casseroles or Large Jars with Restricted Mouths.

Type 190. Casserole or Large Jar

CMD No	Context	Other Information
2280	GER 002 (6, 4)	

Fabric: Sandy dark grey, dark grey-black surfaces; surfaces (certainly the inner) originally burnished.

Type 191. Casserole or Large Jar

CMD No	Context	Other Information
965	GER 002 (*4*, 4/1)	Sandy grey
928	GER 002 (*1*, 2)	Orange-brown with red slip

Type 192. Casserole or Large Jar

The single example comes from a context dating to the late 2nd-3rd century.

CMD No	Context	Other Information
2823	GER 002 (*4*, 74)	

Fabric: Sandy orange-brown, reddish-brown core, dark grey outer surface. Smoothed and burnished outer surface. Inclusions: abundant rounded quartz, main fraction 0.1-0.2mm, some 0.2-0.5mm, occasionally up to 1.5mm; sparse rounded lime, main fraction 0.1-0.3mm.

Type 193. Casserole or Large Jar

Vessel [297] comes from a context of the late 2nd-3rd century AD.

CMD No	Context	Other Information
297	GER 002 (*4*, 2/2)	Grey with red core; slipped.
3235	GER 002 (60, s)	Black with red core.
2011	GER 002 (g)	Sandy reddish-purple.

Type 194. Casserole or Large Jar

The type specimen, vessel [2032] comes from a context (GER 001.4 (24, 1)) of the late 2nd-3rd century AD.

CMD No	Context	Other Information
953	GER 002 (*4*, 4/1)	
3139	GER 002 (28, s)	
2032	GER 001.4 (*24*, 1)	

Fabric: Sandy orange-brown, with dark grey surfaces; there is a cream wash or slip over the outer surface; inclusions: moderate rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, occasionally up to 0.5mm; sparse rounded lime up to 0.5mm

Types 195 – 203. Jars

Type 195. Jar

This vessel appears very similar to jars in Pantellerian ware (see Dore and Keay 1989, fig. 61, nos 291 and 292). This identification cannot be verified, however, since none of the authors have seen the piece. The fabric description given in the original field notebook is equivocal.

CMD No	Context	Other Information
842	GER 001.4 (8)	Dark brown with black surface

Type 196. Jar

CMD No	Context	Other Information
3709	TIN 001 (*B*)	
3611	TIN 001 (*B*)	

Fabric: Gritty red-brown, smoothed black surfaces; inclusions: moderate rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, a little 0.2-0.5mm; sparse rounded lime up to 0.5mm.

Type 197. Jar

CMD No	Context	Other Information
3684	TIN 001 (*B*)	Grey fabric, brownish surface, probably not slipped

Type 198. Jar

CMD No	Context	Other Information
604	ZIN 109 (11)	Light buff

Type 199. Jar

CMD No	Context	Other Information
578	ZIN 109	No fabric description

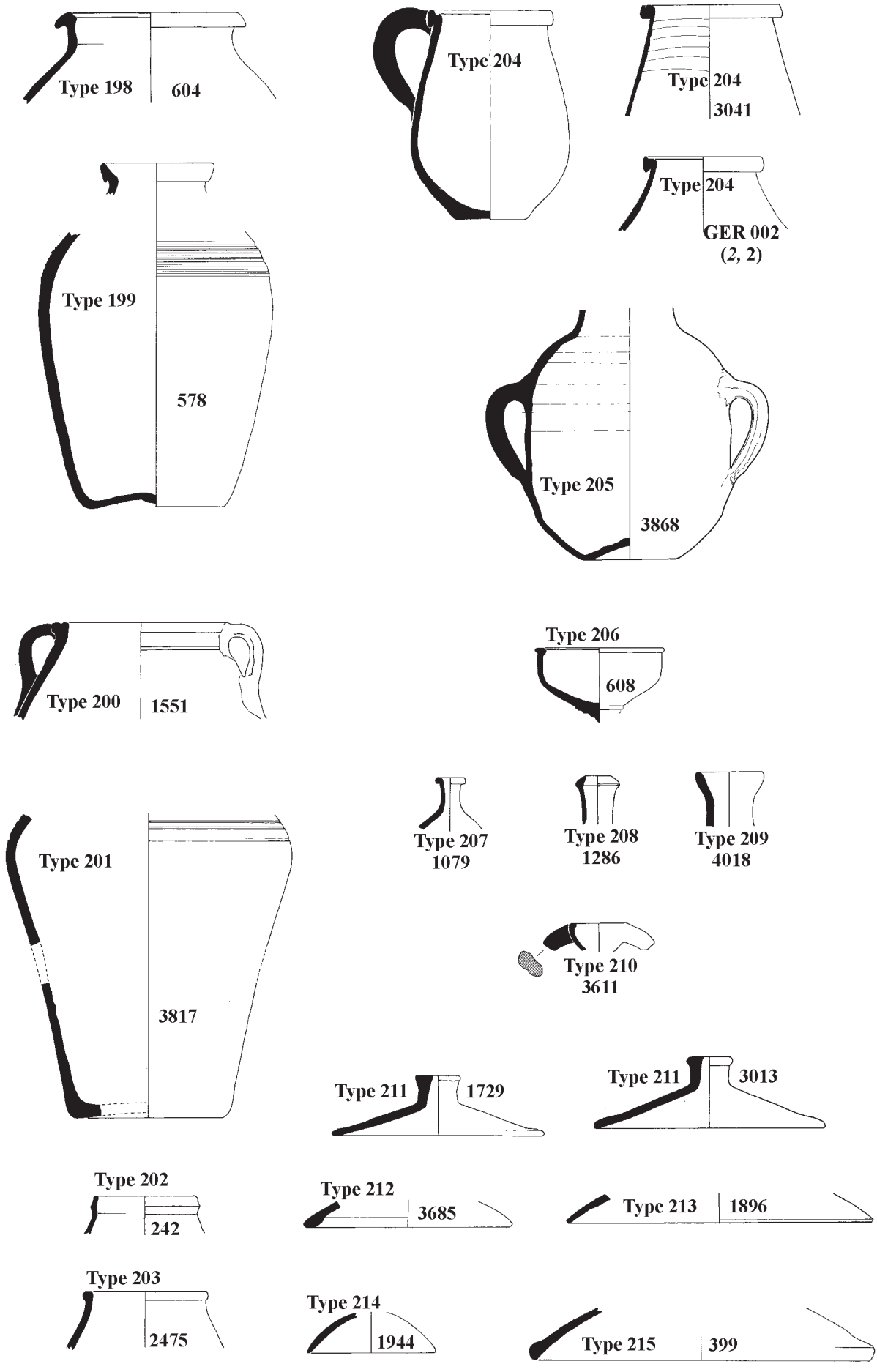


Figure 41.30. Coarseware types 198-215. 1:4.

Type 200. Jar

CMD No	Context	Other Information
1551	ZIN 109 (G)	Metallic brown-red

Type 201. Jar

CMD No	Context	Other Information
3817	LEK 009 (G)	

Type 202. Jar
Small jar or flask.

CMD No	Context	Other Information
242	GER 002 (*4*, 5/4)	

Fabric: Sandy orange-brown, dark grey surfaces, burnished outer surface; inclusions: moderate rounded quartz, main fraction 0.1-0.2mm, some up to 0.5mm, occasional max of 1mm.

Type 203. Jar
Small jar. The single example comes from a context which dates to the late 1st or 2nd century AD.

CMD No	Context	Other Information
2475	GER 002 (*6*, 14)	CC4

Fabric: Sandy orange-brown, dark grey surfaces, burnished outer surface; inclusions: moderate rounded quartz, main fraction 0.1-0.2mm, some up to 0.5mm, occasional max of 1mm.

Types 204 – 206: Mugs and Feeders

Type 204. Mug
A small bag-shaped mug or jug usually with a single handle. Vessels of this type have been found on sites all along the Tunisian and Tripolitanian coasts: Carthage (ER Jugs 1 and 2; for examples from well-dated contexts see Tomber 1986, and also Fulford 1994, 70, Type 3 the earliest occurrence of which is dated to the second half of the 1st century AD), Uzita (Van der Werff 1982, pl. 27 for a particularly good example), Leptiminus (Dore 1992, no. 86), Sabratha (Dore and Keay 1989, particularly Type 350). At Sabratha, many examples were recovered from excavations of the tophet and are on display in the Punic Museum (Brecciaroli-Taborelli 1983 has a report on the salvage excavation; there has been no publication, so far as we are aware, of the pottery). Examples have been noted (by Dore) in the museum of Lepcis Magna from contexts (mostly funerary) between Lepcis and Miṣurāta. They also occur in the pre-desert area (Dore 1996, Type 37 and 38). Overall, the available evidence suggests that the form was common in the 2nd to 3rd centuries AD. The typical fabric described below is the same as the typical fabric in which the principal 2nd- to 4th-century Tripolitanian casserole type (our Type 173) occurs.

CMD No	Context	Other Information
3041	CHA 001	
[H14]	GER 011 (T A3.3)	
	GER 002 (*2*, 2)	
[H188]	GER 011 (T A3.3)	

Fabric: The typical fabric is that in which the example from GER 002 (2, 2), below, appears: sandy orange-brown, orange core with thin dark-grey margins; cream-brown slip on outer surface; inclusions: abundant, rounded quartz all *c.*0.1mm; sparse, rounded limestone up to 0.6mm.

Type 205. Feeder
Two-handled flask or feeder, or possibly a miniature model of an amphora. A very similar vessel is known from Mausoleum 1 in the Roman Cemetery of Pupput, close by modern Hammamet, Tunisia (Bonifay 2004, 222). Bonifay regards the Pupput example as a representation of one of three types of amphora 'de tradition punique' manufactured in the Hammamet area and notes, 'Le dépôt de céramiques miniatures dans les nécropoles puniques et néo-puniques est un phénomène bien documenté' (Bonifay 2004, 222, n. 56).

CMD No	Context	Other Information
3868	GRE 001	

Type 206. Cup
Small stemmed cup. The break on the base suggests that this vessel was originally attached to a more extensive structure.

CMD No	Context	Other Information
608	ZIN 109 (4)	Red, hard, well-made

Types 207 – 210. Unguentaria

Type 207. Unguentarium

CMD No	Context	Other Information
1079	GSC 008	Light fabric, buff ware

Type 208. Unguentarium

CMD No	Context	Other Information
1286	GSC 008	Buff fabric

Type 209. Unguentarium

CMD No	Context	Other Information
4018	LEK 006	Black fabric, red core

Type 210. Unguentarium

CMD No	Context	Other Information
3611	TIN 001 (*BE*)	Sandy, pink fabric, yellow slip

Types 211-214. Lids

Type 211. Lid

CMD No	Context	Other Information
1729	FJJ 004	Red sandy brick fabric
3013	FJJ 004	Dark fabric

Type 212. Lid

CMD No	Context	Other Information
3685	TIN 001 (*B*)	Dark inside, black outside

Type 213. Lid

CMD No	Context	Other Information
1896	GER 001.3 (1)	Reddish-brown with grey core

Type 214. Lid

CMD No	Context	Other Information
1944	GER 003 (152)	Hard, metallic, dark purplish red with brown core

Type 215. Lid

The fabric of this vessel occurs at Carthage where it is known as Early Roman Cooking Ware and African Black Top Ware (see Hayes 1976, 87, 93).

CMD No	Context	Other Information
399	GER 001.4 (12)	

Fabric: Gritty orange with orange-yellow surfaces; the lip and moulding of the rim are black; the inner surface has been wiped, the outer surface knife-trimmed; inclusions: moderate rounded quartz, main fraction 0.1-0.2mm, a little 0.2-0.6mm; sparse rounded black iron rich, occasional max of 0.2mm; sparse rounded lime, occasional max of 1mm.

Types 216 and 217. Pedestal vases

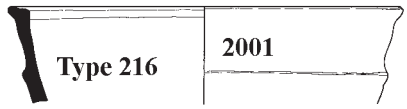
Type 216. Pedestal Vase

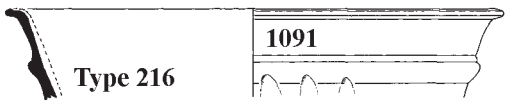
This is a highly distinctive vessel class. The general form is that of an inverted bell-shape with a pedestal foot. The rim consists of a short, plain flange which, in the case of 236, is barely articulated from the upper wall. There is generally a clearly demarcated undecorated band just below the rim. Decoration consists of: a) parallel, horizontal cordons; b) impressions, often of date-stones, but with various other motifs also represented. There appears to be a case for seeing these forms as copying a similar form in Italian terra sigillata. The similarity between the vessel H51 from Ayoub's excavation of Sāniat bin Huwaydī and some of the contemporary Italian designs is striking. In particular we might note that form R9.2.1 (illustrated by Kenrick in *Conspectus Formarum*, Tafel 58, p. 178) bears a wheel-like motif that seems to be exactly matched by vessel H51.

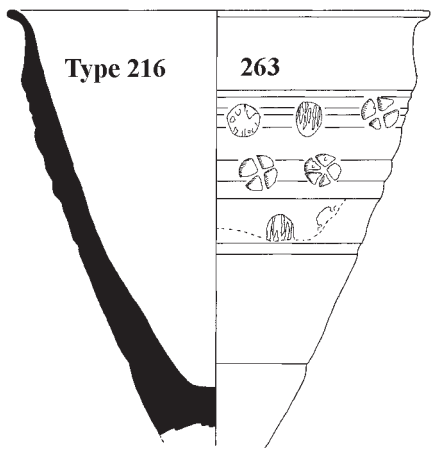
CMD No	Context	Other Information
2001	GER 003 (200)	
[H51]	GER 011 (T A3.1)	
463	UAT 016	
1296	ZIN 115 (S)	
1091	ZIN 220 (g)	
263	ZIN 001 (s)	

Fabric: The fabrics in which these vessels were manufactured are extremely diverse. The example from Zinkekra [263] is in a very heavy fabric that seems to be related to the amphora fabrics of amphora classes 2-4. In contrast, that from Waṭwāt [463] is in a much lighter fabric that appears very similar to the local handmade Berber Red Wares. A fragmentary example of a wall-sherd from Jarma, which bears the date-stone impressions, but which need not come from a pedestal vase, is in a much softer purer fabric, very much like those of Italian wine amphorae of the 1st century BC and AD.

The dating of these vessels is unfortunately not as precise as we might wish, but better than for other vessels. Vessel [H51] comes from tomb A3.1 at Sāniat bin Huwaydī dug by Ayoub, and was found in association with Italian Sigillata dishes stamped by the workshop of L. Rasinius Pisanus, dating to the mid to late 1st century AD. The







Type216
H51

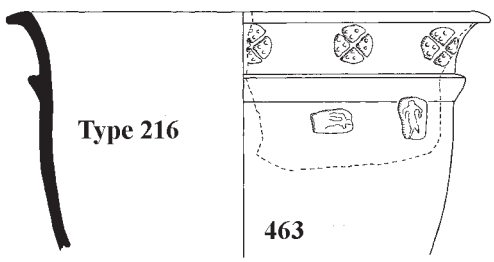


Figure 41.31. Coarseware types 216-217. 1:4.

parallels in the chalice series of relief moulded Italian wares date to as late as the Claudian period (*Conspectus Formarum*, 178), suggesting that these vessels were being produced around the middle of the 1st century AD.

Type 217. Pedestal Vase
Pedestal feet probably to be associated with type 216.

CMD No	Context	Other Information
2560	GER 002 (*6*, 18)	
288	ZIN 296	

Types 218-238. Flagons and Jugs

Type 218. Amphoroid Flagon
This type (along with types 219-220) could be a further example of the small 'amphoroid' forms discussed under amphora types 6-8. Generally speaking, they are thinner walled and narrower necked than these types and have therefore been placed in the flagon category. Parallels are given with the amphora types. Date: 1st – 2nd century AD.

CMD No	Context	Other Information
6004	GER 001.3	
6040	GER 001.3	
6029	GER 001.3	
6037	GER 001.3	
6033	TIN 001 (*B*, 17, s)	

Fabric: Two fabrics seem to be represented by the examples below.
1. Red-brown with black surfaces; this fabric can be quite fine – ie with abundant rounded quartz, all of which is <=0.1mm, and a little rounded lime, 0.1-0.3mm – or it can be somewhat coarser – with abundant rounded quartz, main fraction 0.1-0.3mm, a little 0.4-0.6mm, and an occasional max of 1.5mm, and little or no lime.
2. Fine dull orange-brown with a cream slip on the outer surface; inclusions: sparse angular black vitreous grains, main fraction 0.2-0.5mm in a silty matrix containing very fine lime.

Type 218.1. Amphoroid Flagon
A type which occurs frequently in the Tripolitanian pre-desert where the evidence suggests a date in the range 1st – 3rd century AD (Dore 1996, 361, Type 33).

CMD No	Context	Other Information
1192	GSC 004	
4198	TWE 011	
619	ZIN 109 (11)	

Fabric: Sandy orange-buff with traces of a cream slip on the external surface.

Type 219. Amphoroid Flagon

CMD No	Context	Other Information
3374	GER 002 (*4*, 120)	
4197	TWE 011	

Fabric: Sandy orange-brown, cream-brown surfaces; inclusions: abundant rounded quartz, main fraction <=0.1mm, occasional max of 0.5mm; moderate rounded lime, main fraction <=0.1mm.

Type 220. Amphoroid Flagon

CMD No	Context	Other Information
1984	CHA 001	
1994	CHA 001 (G)	
	FJJ 006	
3006	FJJ 006	
2232	GER 002	
1151	GSC 002	
1159	GSC 002 (G)	
1313	GSC 005 (g)	
677	ZIN 001-003	

Fabric: These examples are all in a lime-rich fabric. Sandy orange-brown, yellowish-cream slip on outer surface; inclusions: moderate to abundant rounded lime, main fraction 0.1-0.5mm, some 0.5-2.0mm.

Type 221. Flagon
There is a close parallel for this type, both in form and fabric, in the pre-desert (Dore 1996, fig. 47.5). Occurrences of the type in the pre-desert are almost entirely confined to late sites and suggest a date not earlier than the late 3rd century AD.

CMD No	Context	Other Information
3818	LEK 009 (G)	
3712	TIN 001 (*B*, 5)	
3711	TIN 001 (*B*, Y)	
6031	TIN 001 (*B*, Y)	

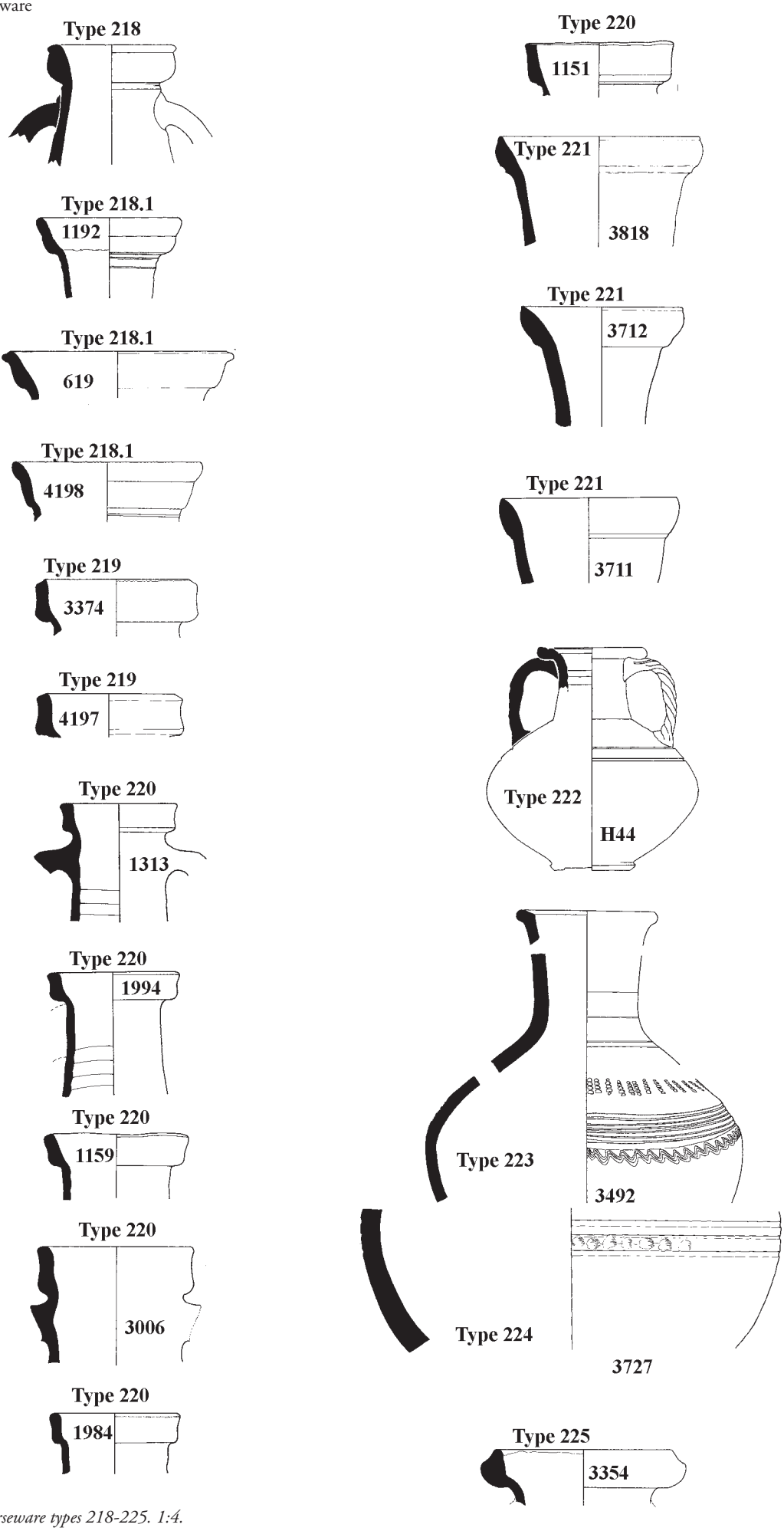


Figure 41.32. Coarseware types 218-225. 1:4.

Fabric: Sandy red-brown, black surfaces; inclusions: abundant rounded quartz, main fraction <=0.1mm, a little 0.2-0.3mm, occasional max of 0.5mm; sparse rounded lime, main fraction 0.2-0.5mm.

Type 222. Flagon
Two-handled flagon or flask with ovoid body. A vessel of this type is known from a tomb on the coast near Lepcis Magna (unpublished, in Lepcis Magna museum). Rim sherds which are very likely to be from the type occur in the pre-desert area (Dore 1996, Type 40). The fineware associations in the pre-desert do not allow any close dating of the type but general considerations would suggest that it is early, that is, 1st-2nd century AD. With the exception of [H44], which was seen in January 2000 in Jarma Museum, our only information concerning these vessels comes from the Sabhā Museum catalogue and Daniels' archive photographs.

CMD No	Context	Other Information
[H44]	GER 011 (T A2.2)	Pale buff fabric with glossy burnish on exterior surface
[H21]	GER 011 (T A2.4)	Light red fabric One handle is broken off
[H43]	GER 011 (T A3.1)	Grey fabric, brown slip in places, smoothed outer surfaces, slight gloss. Blackened in places
3048	FUG 004	Hard red fabric

Type 223. Flagon

CMD No	Context	Other Information
3492	ZOU 006	Fabric unknown

Type 224. Flagon
Sherd from the globular body of a large flagon.

CMD No	Context	Other Information
3727	RUG area	Sandy, dark fabric with red surface; outer surface has a lighter, yellow-brown slip

Type 225. Flagon
The bead and flange rim of this type seems to be characteristic of the Mid-Roman period (see Dore and Keay 1989, fig 66, no. 344 and fig. 67, no. 369 both from contexts of the 2nd century AD).

CMD No	Context	Other Information
3354	GER 002 (*8*, 10)	

Fabric: Sandy orange-brown, dark grey surfaces; inclusions: moderate rounded quartz, main fraction 0.1-0.2mm; some 0.2-0.5mm, occasional max of 1mm

Type 226. Flagon
The type occurs at Carthage (Fulford 1984, fig. 80, Type 24), Uzita (Van der Werff 1982, pl. 11, no. 18), Sabratha (Dore and Keay 1989, fig 67, Type 361), and in the pre-desert (Dore 1996, fig. 47.5, Types 49 and 50). The context at Uzita could be as early as the late 1st century AD. One of the contexts in the pre-desert (Type 49 from the midden of *qasr* Mm 10) has a *TPQ* of *c.*AD 200. The occurrence cited at Carthage, in contexts dating from the mid 5th to the early 6th century AD, is likely to be residual. Suggested date range 2nd-4th century AD.

CMD No	Context	Other Information
3558	GEL 004	
2526	GER 002 (*4*, 120)	
3666	TIN 001 (*A*, 103, s)	

Fabric: Sandy red-brown, smoothed black surfaces; inclusions: moderate-abundant rounded quartz, main fraction <=0.1mm, a little 0.2-0.3mm, occasional max of 0.5mm; sparse rounded lime, main fraction 0.2-0.5mm

Type 227. Flagon

CMD No	Context	Other Information
3542	ZOU 002	Brownish fabric

Type 228. Flagon
Mid-Roman? Similar to Benghazi form 1146 (Riley 1979).

CMD No	Context	Other Information
6036	GER 001.3	
	TIN 001 (*A*)	
3653	TIN 001 (*A*, 23, s)	

Fabric: Gritty orange-brown, or grey-brown, with dark grey core; cream outer surface; inclusions: a discrete fabric with abundant well-rounded quartz, main fraction 0.2-0.5mm, occasional max. of 3.5mm; a scatter of very fine lime <0.1mm and some rounded grains 0.2-0.3mm.

Type 229. Flagon

CMD No	Context	Other Information
3694	TIN 001 (*B*)	Buff fabric

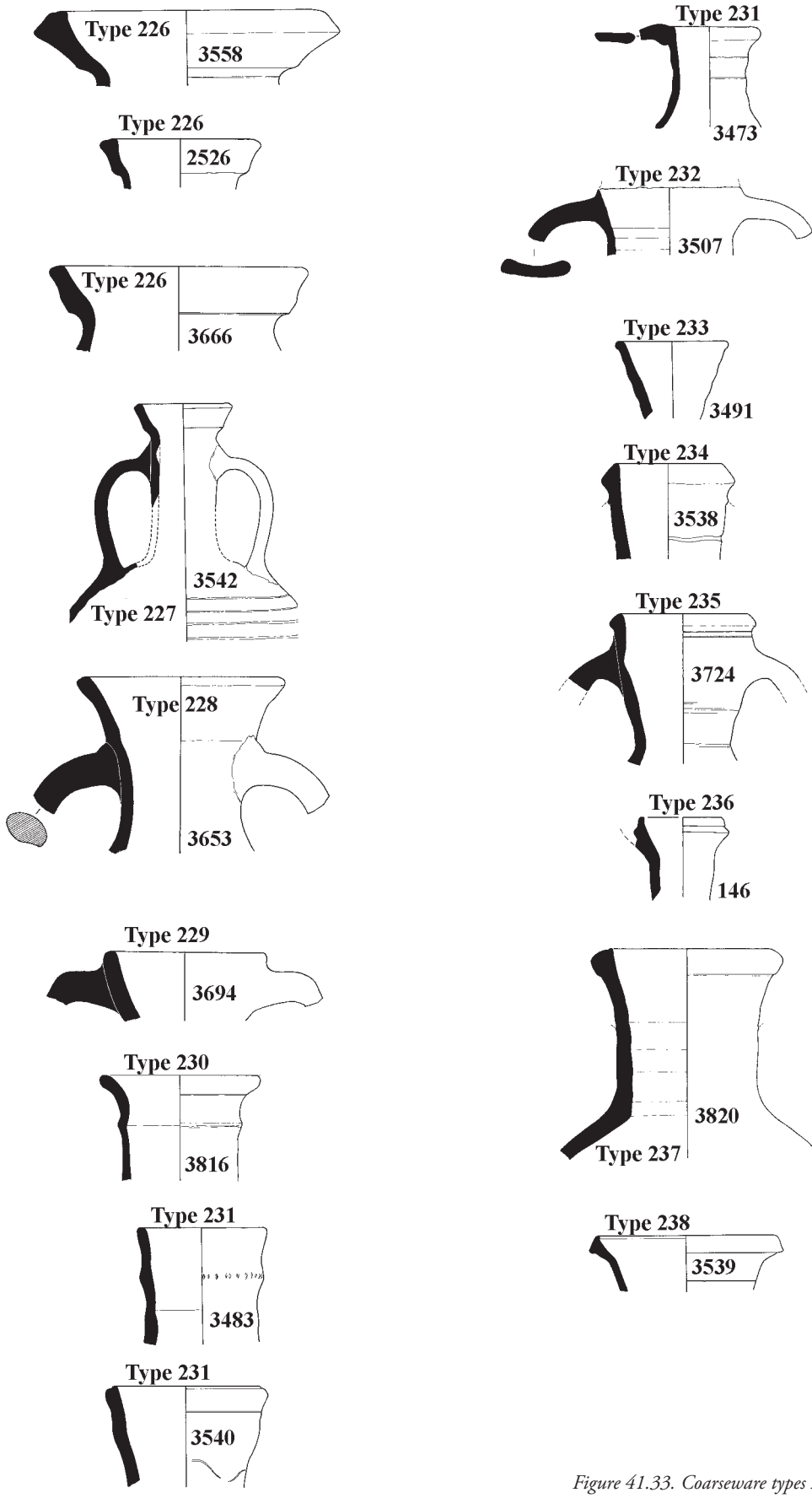


Figure 41.33. Coarseware types 226-238. 1:4.

Type 230. Jug
This form is designated LR Jug 1 at Carthage (Tomber 1988, 472 and fig. 7, nos 163-4; Fulford 1984, Closed Form 10). Mid 4th-mid 6th century AD.

CMD No	Context	Other Information
3816	LEK 009	Sandy, dull red fabric, yellowish slip
4198	TWE 011	Sandy buff fabric, slightly lighter ext. surface

Fabric: The fabric of vessel [4198] conforms reasonably well to the 'Plain Ware' of the Carthage examples (Tomber 1988, 469), that of 3816 less so.

Type 231. Jug
Late?

CMD No	Context	Other Information
3473	ZOU 001	Brick red fabric inside, dark surface
3483	ZOU 002	Hard brown fabric inside, darker natural grey outside
3540	ZOU 002 (G)	

Type 232. Jug
As we have not examined the vessel, we cannot tell whether it was actually double-handled or simply conventionally represented that way. If it was single handled then it is similar to LR Jug 3 at Carthage (Tomber 1988, 42 and fig. 7, nos. 170-2). Date: mid 4th – mid 6th century AD.

CMD No	Context	Other Information
3507	ZOU 004	Dark brown grey fabric; darkish on surfaces

Type 233. Jug
This form is designated LR Jug 3 at Carthage (Tomber 1988, 472 and fig. 7, nos 170-2). Date: mid 4th-mid 6th century AD. The fabric of our example may be one of the 'cooking ware' fabrics in which the Carthage type sometimes occurs (Tomber 1988, 470).

CMD No	Context	Other Information
3491	ZOU 006	Dark fabric with white grits. Dark surface and light yellowish slip

Type 234. Flagon

CMD No	Context	Other Information
3538	ZOU 002 (G)	

Fabric: Sandy, slightly orangey-brown, greyish brown surfaces; inclusions: abundant rounded quartz, main fraction 0.1-0.2mm, occasional max of 0.8mm.

Type 235. Flagon

CMD No	Context	Other Information
3725	RUG 001	

Fabric: Well-fired, sandy dark grey; inclusions: abundant rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, occasional max of 0.5mm.

Type 236. Flagon

CMD No	Context	Other Information
146	TAG 001	Hard self-coloured fabric, almost a fine ware
3611	TIN 001 (*BE*)	

Type 237. Flagon

CMD No	Context	Other Information
3820	LEK 009 (G)	

Fabric: Sandy-gritty red-brown, smoothed black surfaces; inclusions: moderate rounded quartz, main fraction <=0.1mm, some 0.1-0.2mm, a little 0.2-0.5mm; sparse rounded lime, main fraction <=0.2mm, occasional max of 0.5mm.

Type 238. Flagon

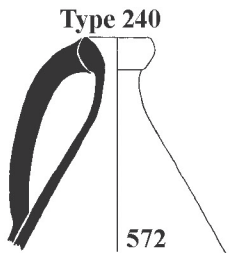
CMD No	Context	Other Information
3539	ZOU 004	Buff fabric

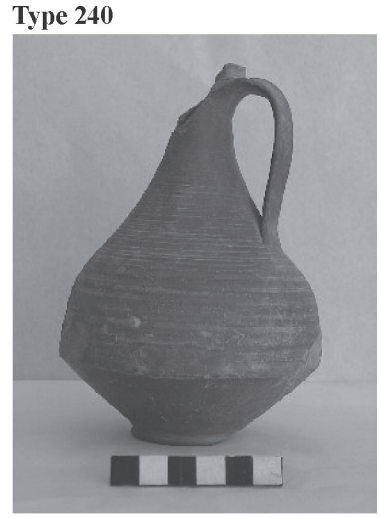
Type 239. Flagon or Jug

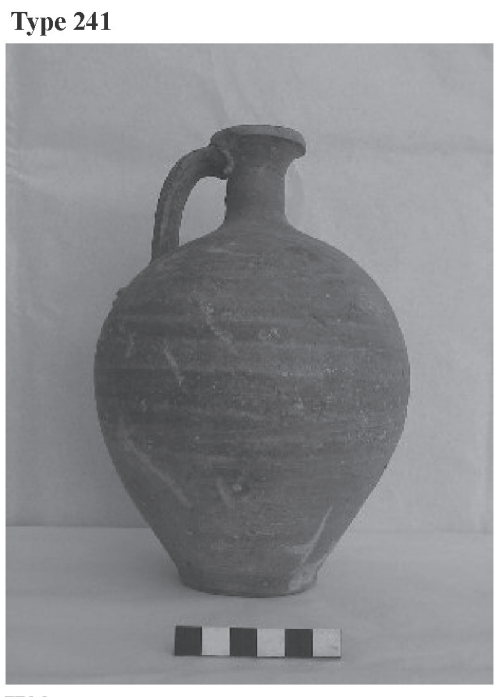
CMD No	Context	Other Information
	GER 011 (T A2.4)	Dark purplish, hard
429	ZIN 011 (30)	Reddish brown

Type 240. Flagon or Jug
Similar vessels have been found in tombs of mid-Roman date at Raqqada (Salomonson 1968). Suggested date: 3rd-4th century AD.

CMD No	Context	Other Information
	GER 011 (T A2.3)	Fine red polished







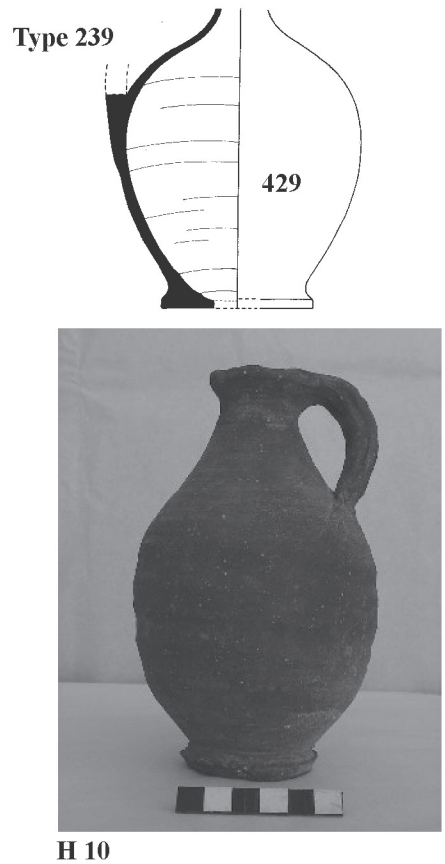


Figure 41.34. Coarseware types 239-241. 1:4.

CMD No	Context	Other Information
	GER 011 (T A2.2)	Fine, red, polished
	GER 011 (T A2.2)	Fine, red, polished
572	ZIN 026 (N)	Hard grey; white calcite, grit flecks
279	ZIN 280 (S)	Red, hard metallic, slightly darker strip on handle (ARS?)

Type 241. Flagon

CMD No	Context	Other Information
	GER 011 (T A2.3)	Brown sandy fabric, darker surface

Type 242. Flagon
2nd century AD?

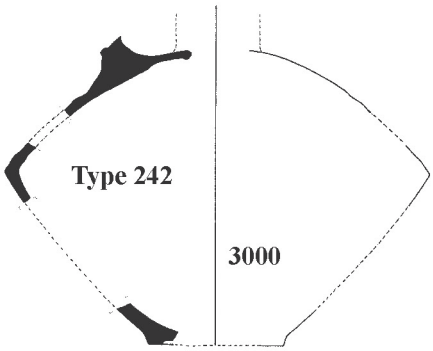
CMD No	Context	Other Information
[H202]	Jarma area = perhaps GER 011?	Pink, sandy fabric, cream slip
[H46]	GER 011 (T A2.3)	
[H45]	GER 011 (T A2.3)	
[H5]	GER 011 (T A2.1)	
3000	FJJ 002	Red fabric
4047	Jarma area	

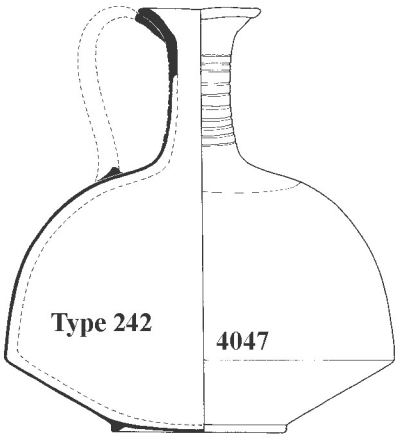
Type 243. Flagon

CMD No	Context	Other Information
[H101]	GER 011 (T A2.2)	
[H20]	GER 011 (T A2.4)	Refined red clay. Combed wavy lines surrounded the body, inside incised horizontal lines
[H97]	GER 011 (T A2.4)	Pale buff
3756	RUG area	Fabric orange brown outer, dark brown inner, cream brown outer surface, inclusions abundant quartz, less lime

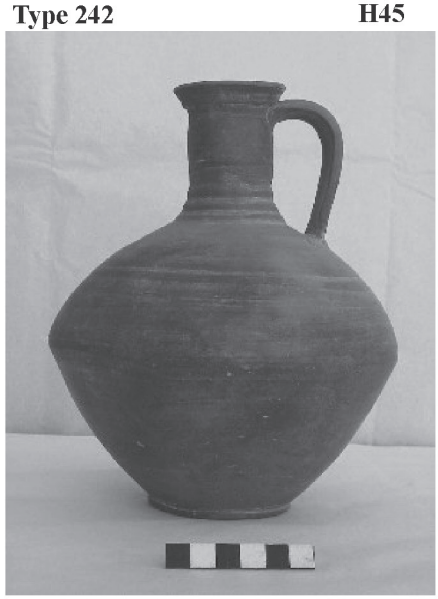
Type 244. Flagon or Bowl?
Islamic. It is difficult to decide whether this fragment is from the body of a flagon or a bowl.

CMD No	Context	Other Information
3826	LEK 009	Sandy fabric grey surface; glazed outside





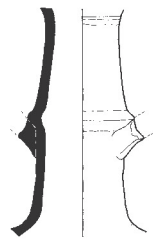
Type 242 H45



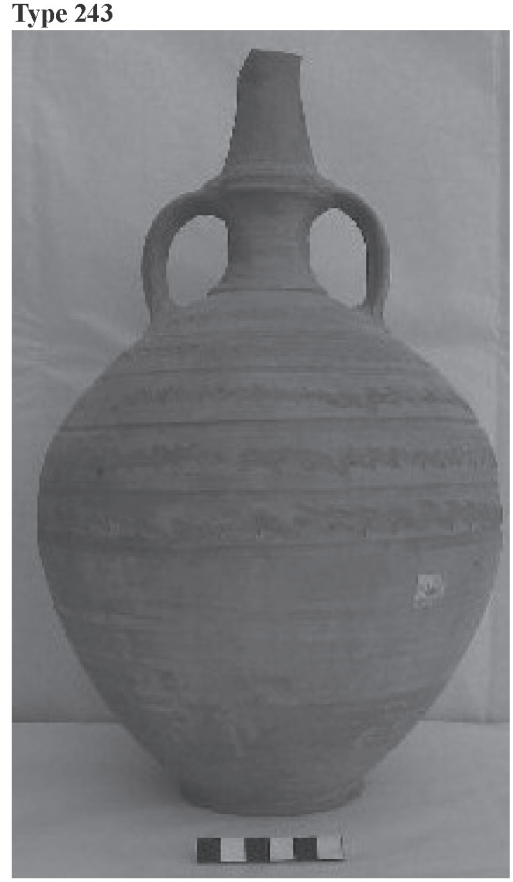
Type 242

H46

Type 243

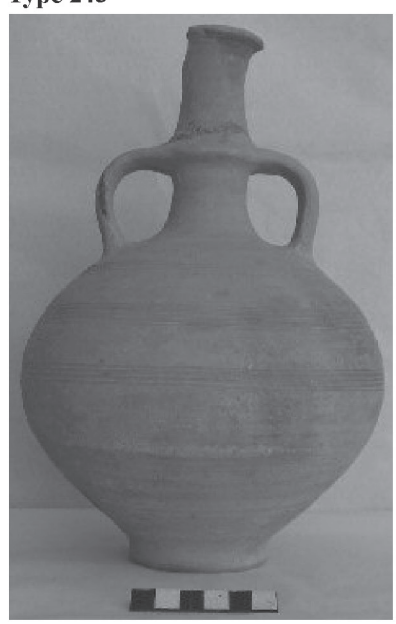


Type 243



H20

Type 243



H97

Type 243

H101

Figure 41.35. Coarseware types 242-244. 1:4.

PART E. HANDMADE VESSELS

Type 301. Jar or Bowl
A deep wide-mouth jar or bowl. The evidence of [1311] suggests a hemispherical and footless body-shape. At any rate no footed base fragments have been found which could be associated with this type. The upper wall is slightly in-turned and there is a pronounced lip on the back-face of the rim. The outer face of the rim carries a plain moulding above a deep horizontal groove. In many examples there are small holes pierced (before firing) in this groove through the vessel wall to the interior. The only part of the type which is usually decorated is the flat area on the top of the rim. For the most part this decoration consists of simple impression but in a few examples (1231 and 3650) the decoration appears to have been made by a rocker stamp.

CMD No	Context	Other information
1231	ZIN 013 (110)	Zinkekrā fabric/ ø 22 cm
58	ZIN 013 (1)	Zinkekrā fabric/ ø 31.6cm
47 [1311]	ZIN 001-003	
1133	ZIN 013 (32)	Zinkekrā fabric/ ø 26 cm
1251	ZIN 013 (110)	Zinkekrā fabric/ ø 21.2 cm
260	ZIN 037(1)	Zinkekrā fabric; RTHM3/ ø 28 cm
	ELH 005	
	ELH 005	
3650	TIN 001 (*A*)	

Type 302. Jar or Bowl
A similar form to Type 301 but shallower and more open. The upper wall is generally slightly out-turned, or approximately vertical, but sometimes leans inwards very slightly. There is usually a slight lip to the inner face of the rim and a very slight flange to the outer, above a deep horizontal groove which, like that in type 301, is pierced at regular intervals. As in type 301, the only area decorated is the rim top, simple impression being the general rule.

CMD No	Context	Other information
3805	CHA 007	Berber red fabric
95	ELH 006	Berber red
1480	ELH 003	Berber red
1470	FJJ 002	Red fabric with white grits and some quartz
1453	GER 002	Berber red
1235	GER 002 (4)	Berber red with white flakes
104	GER 002 (G)	Grey fabric
	GER 016	
	GER 016	No drawing
1228	ZIN 013 (108)	Zinkekrā fabric/ ø 18 cm
53	ZIN 011 (10)	Zinkekrā fabric/ ø 30 cm
1101	ZIN 013 (107)	Zinkekrā fabric/ ø 10.8 cm
1242	ZIN 013 (36)	Zinkekrā fabric; RTHM1; RTHM16/ ø 25.6 cm
441	ZIN 001-003	Dark grey fabric
1367	ZIN 001	Berber red
426	ZIN 007	Berber red
	ZIN 904	
	ZIN 904	No drawing

Type 303. Bowl
The upper wall is mostly upright but slightly in-turned in some examples. The upper wall is of an even thickness and the rim is plain and without the external moulding and internal lip of types 301 and 302. Where it resembles these types more closely is in having the deep horizontal groove on the external surface just below the rim, pierced at regular intervals. [116] is decorated on its exterior surface with a simple impressed pattern (confirmed by re-examination of the vessel, in 2000). Several examples have decoration on the rim top. That of [1172] appears to be a wavy line scribed in the clay before firing.

CMD No	Context	Other information
3776	CHA 005	Sandy light red fabric
	ELH 006	No drawing, incl. with 57
1122	GBD 001	
57	GER 002 (.2)	Light fabric, with white flakes; RTHM1
499	ZIN 001-003	
1468	ZIN 001-003	
1237	ZIN 011 (17)	Brickish fabric
1172	ZIN 011 (24)	Dark grey fabric
116	ZIN 0 13 (U/S)	Zinkekrā fabric/ ø 10.8 cm. Decorated

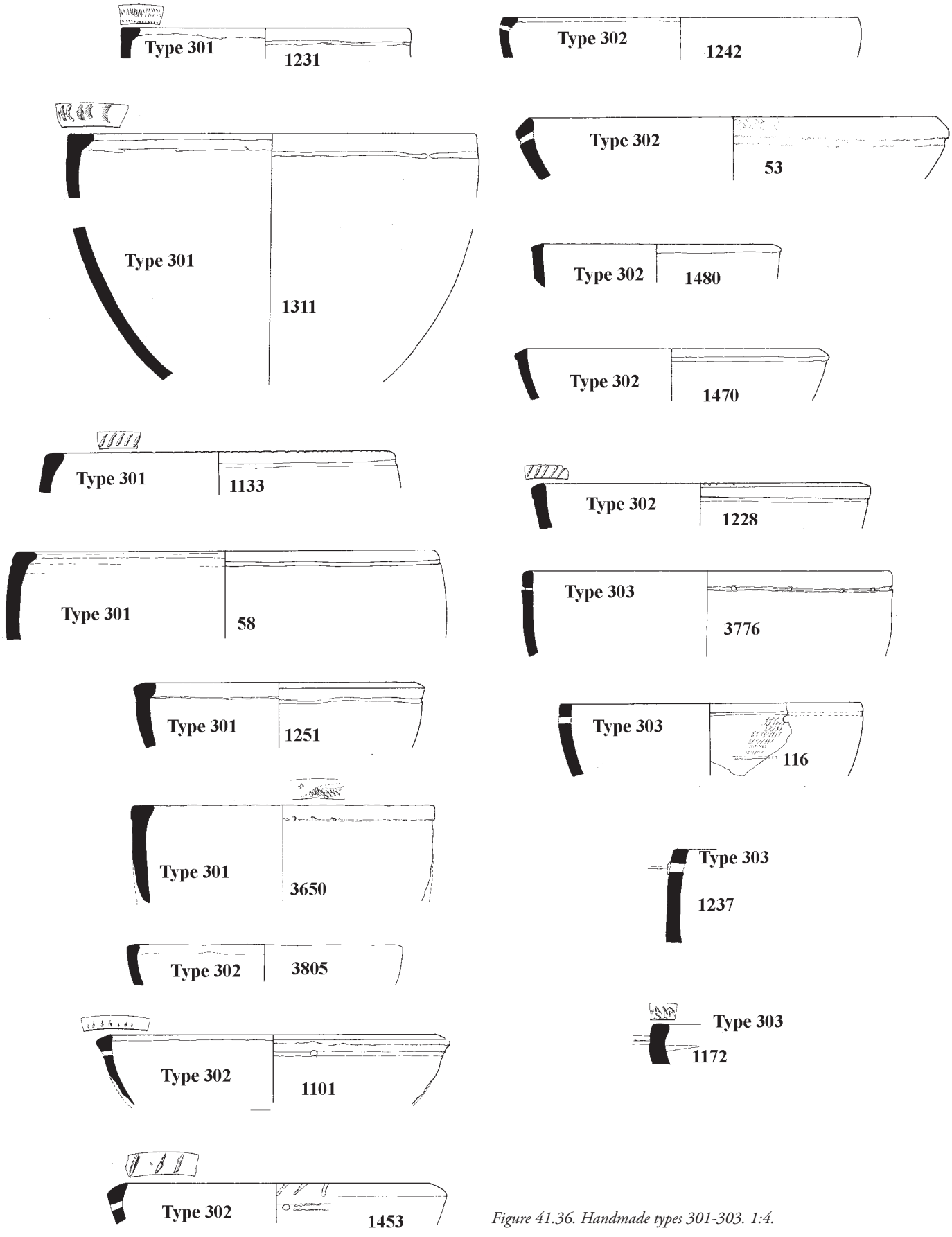


Figure 41.36. Handmade types 301-303. 1:4.

Type 304. Jar or Bowl
A deep bowl of similar form to type 301. It has a thickened, in-turned upper wall but it does not have the pronounced internal lip to the rim as in type 301. As with types 301, 302 and 303, it has the deep horizontal groove just below just the rim, pierced at intervals. One example, [3783] is decorated on the exterior surface though the exact character of this decoration is unclear from the drawing (though it could quite well be rocker).

CMD No	Context	Other information
3787	CHA 005	
3649	TIN 001	Black fabric
1494 [DZ 338]	ZIN 060	Zinkekrā fabric
4 [DZ 18]	ZIN 013	Zinkekrā fabric
55	ZIN 001-003	
1243	ZIN 013 (109)	Dark grey fabric with white flakes
1490	ZIN 060 (S0)	Zinkekrā fabric/ø 23.2cm

Type 305. Deep Jar
The basic form is that of a deep jar with a markedly in-turned upper wall and a more or less developed rim. In the one example which shows an almost complete profile [Daniels 1968, no 56], the body is approximately globular. The upper wall terminates in a rim which is thickened and, in most cases, lightly moulded on its exterior surface. [1564] which is highly abraded may be an example of this type.

Variation in form is discernible – mostly in the degree to which the moulding articulating the rim is developed – but the sample is not nearly large enough to say whether the variation is significant or whether there is a chronological component to it. Vessels recovered by the Fazzān Project from inter-dune sites in the Ubārī sand sea (code EDU; see Part F below) in association with Holocene lithics are of the same type.

Half of the examples of this type carry some form of decoration on the flat band formed by the upper surface of the in-turned rim. Of these, the majority carry bands of packed zig-zag rocker while a few are decorated with simple rocker technique. There are a few examples (59, 1356 and 3416) which carry decoration which appears to have been made with an alternately pivoting stamp, and one example (223) carrying simple impression. Examples from the Ubārī sand sea (EDU 26, 136, 217, 472) also clearly carry decoration on the area below the rim and in common with many examples of high quality ceramics which seem to have been common in the middle Pastoral, may well have been extensively decorated on their exterior surfaces. Table 41.14 below summarises the information.

Table 41.14. Type and location of decoration on selected handmade vessels.

CMD No	Rim	Wall
1289	packed rocker	
223	simple impression	
199	alternate pivot	
56	undecorated	
472		present
67	simple rocker	
1462	packed rocker	
1469	simple rocker	
3659	present	
3661		
136		present
217		present
1211	present	
26	packed rocker	
EDU 026	packed rocker	packed rocker
225		
99		
1089		
1185		
1288		
1356	alternate pivot	
3416	alternate pivot	
EDU 026 Part F, Cat 14		
EDU 026 Part F, Cat 17		? packed rocker

Taking into account the evidence of the examples recovered from the Ubārī sand sea, it seems likely that this is a long-lived type, starting conceivably as early as the middle Pastoral, and continuing down into the Garamantian period in the middle of the 1st millennium BC. One might suggest that the earlier examples of the type are more likely to carry extensive packed rocker decoration on their exterior surfaces while later examples are more likely to carry only decoration on their rims or to be completely plain.

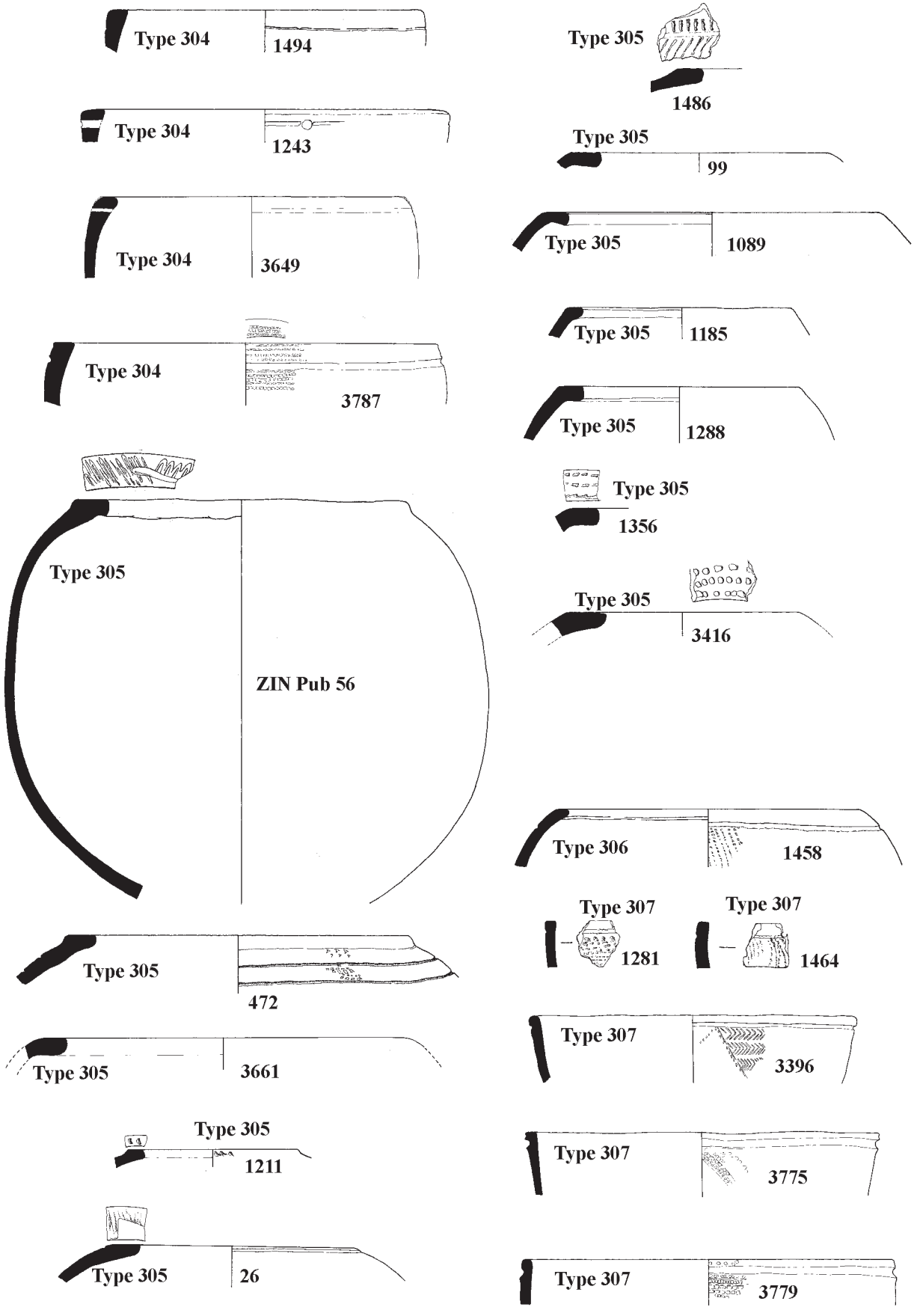


Figure 41.37. Handmade types 304-307. 1:4.

CMD No	Context	Other information
1288		
3416	CLF 008 (53, 3)	
1469	GER 002 (5)	Berber red
	GER 033	
2762	LAR 001	
3659	TIN 001 (*A*)	
3661	TIN 001 (*A*)	
472	TIN 001 (G)	
472	TWE 004?	Dark fabric
223	ZIN 001-003	Zinkekrā fabric/ ø 30.4 cm
	ZIN 001-003	Black berber fabric
1486	ZIN 001-003	
99	ZIN 011 (20)	
1089	ZIN 013 (105)	
1185	ZIN 013 (35)	
1356	ZIN 013 (42)	
1564	ZIN 101 (E)	Zinkekrā fabric/ ø 14cm
67 [DZ 205]	ZIN 011 (26)	Dark black fabric
1211	ZIN 013 (108)	Zinkekrā fabric/ ø 24.8 cm
26 [DZ 79]	ZIN 013 (4)	Berber red
1462 [DZ 340]	ZIN 060 (5)	Dark grey fabric
1289	ZIN 070(1)	Zinkekrā fabric; RTHM3/ ø 25.2 cm
225	ZIN 001 (S)	Zinkekrā fabric/ ø 15.8 cm
217	ZIN 001 (S)	Zinkekrā fabric/ ø 24.8 cm
1062	ZIN 001 (S)	Dark grey fabric
136 [DZ 292]	ZIN 047 (S)	Berber red
59	ZOU 006	Berber red

Type 306. Deep Jar

A deep jar with a markedly inturned upper wall and plain, inturned rim. There is a deep horizontal groove on the exterior surface just below the rim. The external surface is decorated, though the precise character of this cannot be gauged from the drawing. The form has elements in common with type 301, most notably the rim and the horizontal groove, but the upper wall is much more markedly inturned than in that type, and it shares this characteristic much more with type 305. One might possibly regard it as in some sense a transitional form linking the two types.

CMD No	Context	Other information
1458	ZIN 051(1)	Zinkekrā ware/ø 21.2 cm
1490	ZIN 060 (S0)	Zinkekrā fabric/ ø 23.2cm

Types 307 – 310. Bowls/Dishes

These types form a related series of relatively shallow bowls or dishes all with a single horizontal groove on the exterior surface just below the rim. They are distinguished one from another by the form of the rim: all except type 310 are unthickened or only slightly thickened; type 307 has a flat top while type 308 has a more rounded profile; type 309 (which may represent a single anomaly rather than a definable type) has a somewhat reduced rim; type 310 has a thickened rim with a flat top.

For type 307 the drawings are clear enough to suggest that two examples (1281 and 1464) carried zig-zag rocker stamp decoration. For type 308, the drawings clearly show alternately pivoting stamp impressions. The one example of type 309 may bear packed rocker impressions. No. [1047] has packed rocker stamped impression on the rim top.

A vessel similar to type 310 was recovered by the Fazzān Project from inter-dune sites in the Ubārī sand sea (EDU; see Part F below) suggesting that the type has formal antecedents in the middle or late Pastoral periods.

Type 307. Bowl or Dish

CMD No	Context	Other information
3775	CHA 005	Black berber fabric, with grits
3779	CHA 005	Black berber fabric
3396	CLF 004	Black berber fabric with grits
1464	ELH 004	Berber red. Decorated
31	GER 002 (G)	Grey granular fabric with quartz
1281	GER 002 (*3*, 2)	

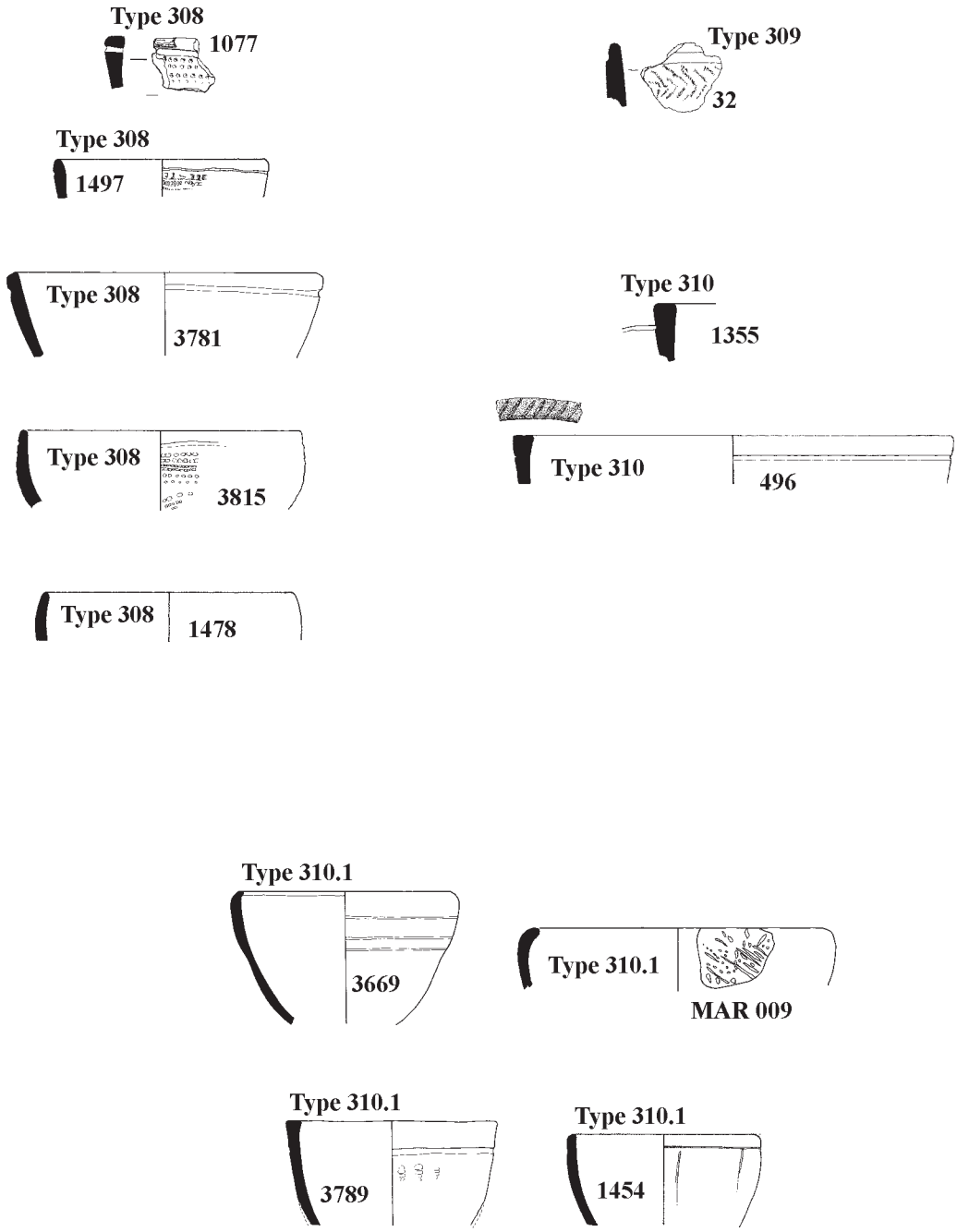


Figure 41.38. Handmade types 308-310.1. 1:4.

Type 308. Bowl or Dish

CMD No	Context	Other information
3781	CHA 005	Black fabric, red surface
1497	ELH 003	Berber red. Decorated
3815	RUG 006	Black berber fabric
439	ZIN 001-003	Berber red
1478 [DZ 331]	ZIN 060	Black fabric
1077	ZIN 011	No fabric description. Decorated
1439	ZIN 001 (S)	Grey fabric. Decorated

Type 309. Bowl or Dish

CMD No	Context	Other information
32	TAG 001	Berber red. Decorated

Type 310. Bowl or Dish

CMD No	Context	Other information
	EDU 018	
496	GER 001 (19)	Black fabric. Decorated
1428	ZIN 001-003	Berber red
1355	ZIN 013 (1)	Grey fabric
1047	ZIN 001 (S)	Berber red

Type 310.1. Small Bowl/Cup

Small bowl or cup with a plain, inturned rim. The vessels are thin-walled and well-made. The fabric is a fine black with a burnished red-brown surface. Although the external surface of the example from MAR 009 is abraded, traces of packed rocker stamp decoration can be clearly discerned.

CMD No	Context	Other information
3784	CHA 001	Black fabric
	MAR 009	
3669	TIN 001 (*A*)	
1454 [DZ 355]	ZIN 075	Black fabric

Type 311. Jar

Necked jar. Most of the examples of this type survive as rim sherds with only small amounts of the body attached. The one exception to this is [3707] from TIN 001 where an associated, but non-conjoined, body sherd suggests that the body shape of the type was globular or ovoid. The type is characterised by a neck, for the most part quite short and a plain rim. The distinguishing characteristic of the rim is its flat top and more or less square sectional profile. There is some variation in rim shape within the type which can be characterised as follows: a) short, very upright, neck articulated both in the interior and exterior profile; b) short, upright, neck articulated only in the exterior profile; c) as (b), but somewhat taller.

The type is very often decorated on the rim top, mostly, as far as can be judged from the drawings, with simple impression.

Eighty percent of the examples of this type are from Zinkekrā. Two are from Tinda (TIN 001), and one from CLF 002.

CMD No	Context	Other information
4031	CLF 002	Berber red
3707	TIN 001	Black fabric
3635	TIN 001 (A)	
485 DZ 209]	ZIN 119	Berber red
440 [DZ 275]	ZIN 034 (3)	Dark grey fabric
113 [DZ 200]	ZIN 011 (17)	Brickish fabric
96 [DZ 180]	ZIN 011 (20)	Dark, grey fabric
1194	ZIN 013 (1)	Dark grey fabric
1081	ZIN 013 (111)	Grey fabric
1144	ZIN 013 (32)	Black grey fabric
1191 [DZ 104]	ZIN 013 (107)	Zinkekrā fabric/ ø14.8cm. Phase Z3
1246	ZIN 013 (109)	Black-grey fabric; RTHM3
	ELH 006	
1178 [DZ 133]	ZIN 013 (110)	Berber red
1245 [DZ 146]	ZIN 013 (111)	Brown fabric, black surface
1422	ZIN 013 (111)	Zinkekrā fabric/ ø14.8 cm. Phase Z0

Type 312. Deep Jar

A deep jar with a markedly inturned upper wall and rim surmounted by a lid-locating collar. The exterior surface below the rim is decorated (with simple impression to judge from the drawing), as are the rim top and the top of the collar.

CMD No	Context	Other information
1058	GSC 008	Black fabric

Type 313. Jar

Small jars with bead rims

CMD No	Context	Other information
1351 [DZ 65]	ZIN 013 (56)	Zinkekrā fabric/ ø 9.2 cm
1227	ZIN 017(38)	Zinkekrā fabric/ ø 13.2 cm

Type 314. Jar or Bowl

Necked wide-mouth bowl or jar. A complete profile is known for the one example of this type. The base is round and unfooted; The plain, everted rim is articulated from the body by a slight shoulder. The external surface is almost completely covered with zig-zag rocker decoration.

CMD No	Context	Other information
1411 [DZ 52]	ZIN 013 (39)	Zinkekrā fabric/ ø 15.2 cm. Phase Z2

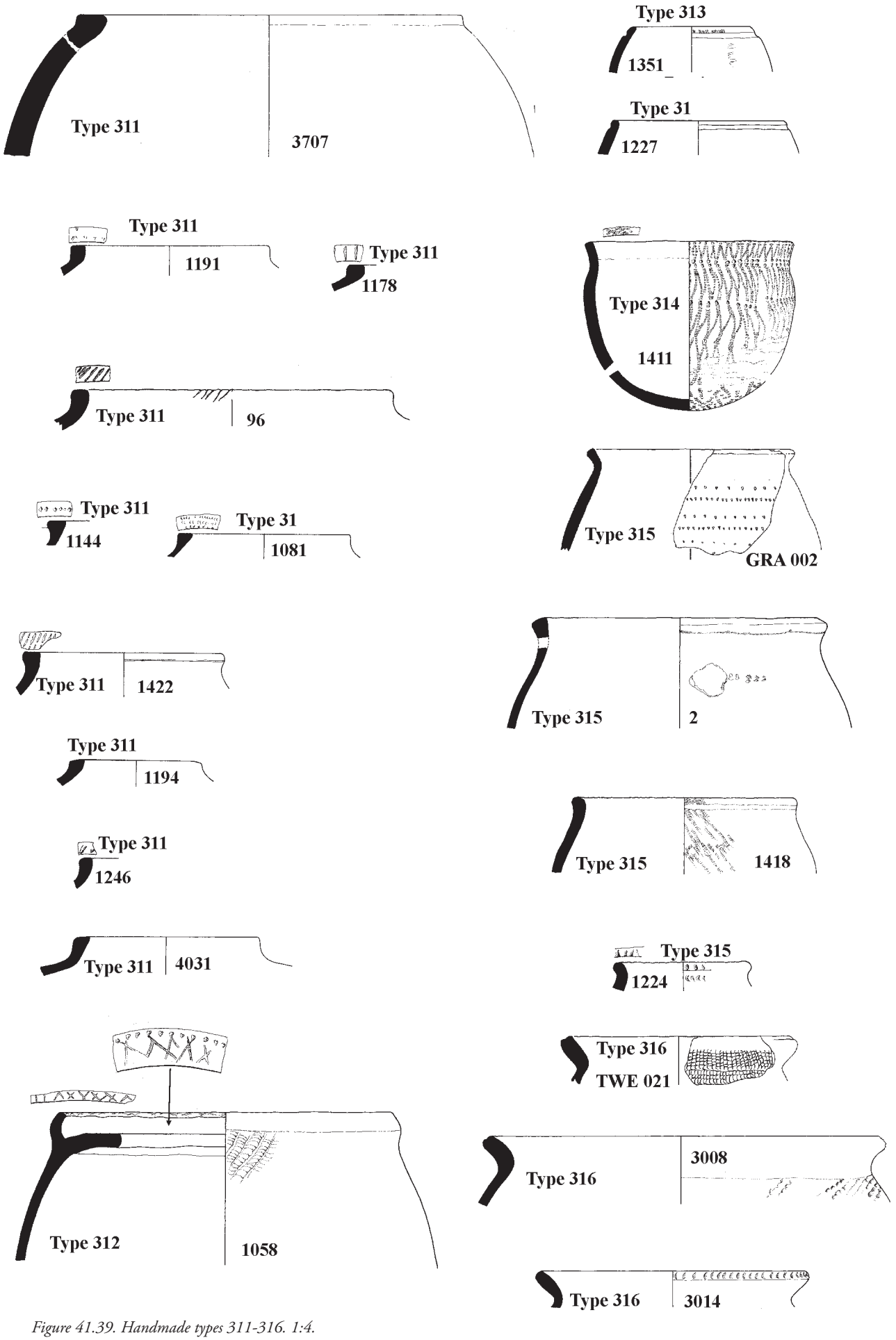


Figure 41.39. Handmade types 311-316. 1:4.

Type 315. Jar
The plain, everted rim is slightly thickened. There is no shoulder. The fabric, particularly of the example from GRA 002, is thick with a somewhat lumpy and poorly finished surface. The external surfaces of two examples of the type are decorated with alternately pivoting stamp impressions.

CMD No	Context	Other information
	GRA 002	Rim sherd and five wall sherds probably all from the same vessel. Diameter at rim: 160mm. Average wall thickness: 9.5mm. Sandy black with dark brown surface. Inclusions: common rounded quartz mostly <=0.mm, occasionally up to 1.0mm. External surfaces decorated with alternately pivoting stamp impressions (non-return).
487 [DZ 212]	ZIN 119	Black fabric
1369 [DZ 161]	ZIN 011 (surface)	No fabric description
2	ZIN 013 (14)	Black berber fabric
1418	ZIN 013 (115)	Zinkekrā fabric/ ø16.4 cm/ Phase Z0
1319	ZIN 013 (29)	Zinkekrā fabric/ ø 15.6cm/ Phase Z1
1224	ZIN 013 (50)	Zinkekrā fabric; RTHM7/ ø 10cm Phase Z1
	ELH 006	

Type 316. Jar
The rim is more everted than in the immediately previous type. The lip of the rim carries a groove in two examples of the type. The external surfaces of two examples are decorated with packed zig-zag rocker impression.

CMD No	Context	Other information
3008	FJJ 006	Berber red
3014	FJJ 006	Berber red
	TWE 021	Rim sherd of jar. Diameter at rim 180mm. Thickness of wall below rim: 5.5mm. Sandy black fabric, orange-brown outer surface, black inner surface. Inclusions: abundant rounded quartz mainly <=0.1mm, some up to 0.5mm. Packed zig-zag rocker impressions on external surface.

Type 317. Jar
The type is distinguished by thick walls and a rim which is only slightly everted and thickened. Zig-zag rocker impression appears on the exterior surface of one example [1097] and the rim top of two others, [108] and [294]. All the examples of the type occur on Zinkekrā except one from Tuwash.

CMD No	Context	Other information
4201	TWE 011	Berber red
1422	ZIN 001-003	
24	ZIN 001-003	
103	ZIN 001-003	
82	ZIN 101-003	
[DZ 294]	ZIN 118	
259	ZIN 001-003	
108 [DZ 5]	ZIN 013 (1)	Dark grey fabric
1097 [DZ 108]	ZIN 013 (107)	Dark/brown fabric

Type 318. Jar
Small jar with everted rim. All examples from Sāniat Jibrīl.

CMD No	Context	Other information
2865	GER 002 (*4*, 74)	Berber Red/ ø 11cm
2304	GER 002 (*6*, 2)	Berber red/ ø 22cm
2675	GER 002 (*6*, 21)	Berber red/ ø 16.5 cm
2781	GER 002 (*6*, 23)	Berber red/ ø 18 cm

Type 319. Bowl or Jar
Small bowl or jar with short everted rim. Two examples from Jarma.

CMD No	Context	Other information
2710	GER 002 (*6*, 21)	Berber red / ø 22cm
2689	GER 002 (*6*, 21)	Berber red/ ø 17cm

Type 320. Jar
Large jars with tall, upright rims. At least one of these, [1254], is decorated with packed zig-zag rocker.

CMD No	Context	Other information
3418	CLF 002	Berber red
3442	CLF 002	Black fabric
2886	GER 002 (*4*, 110)	Berber red/ ø 23 cm
3641	TIN (*A*, 12, 4)	Berber red

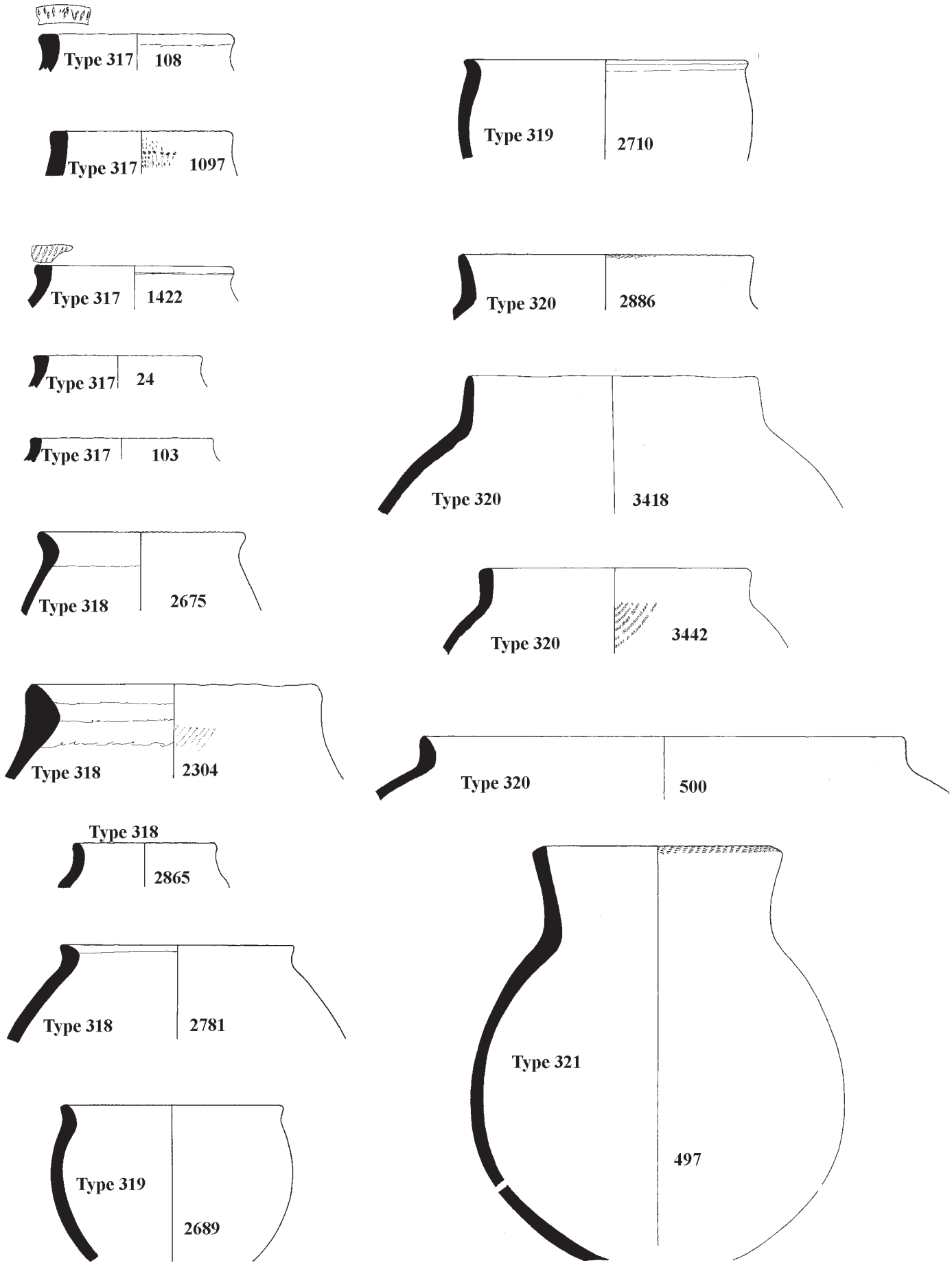


Figure 41.40. Handmade types 317-321. 1:4.

CMD No	Context	Other information
500 [DZ 395]	ZIN 109 (5)	Berber red
1254 [DZ 249]	ZIN 218 (3)	Black fabric

Type 321. Deep Jar
The Zinkekrā example shows an almost complete profile, which is round-bottomed and unfooted. The rim is tall and slight everted. There is decoration on the rim top though its precise character cannot be judged from the drawing. Occurrences at Zinkekrā, CHA 001 and GER 002, 016 suggest a date range of late 1st millennium BC – c. 4th century AD.

CMD No	Context	Other information
	CHA 001(2)	
	GER 002	
	GER 016	
497 [DZ 391]	ZIN 101 (2)	Berber fabric

Type 322. Jar
The rim is slightly out-turned, the lip is square in sectional profile, often decorated and with a single horizontal groove inside it. Many examples are decorated on their exterior surfaces: [1197] bears alternately pivoting stamp decoration, and [1186] packed rocker. All the examples are from Zinkekrā. The type shows the deep horizontal groove on the external surface pierced at intervals, a characteristic typical of types 301, 302 and 303. Like these types, type 322 can be thought of as typical of Zinkekrā.

CMD No	Context	Other information
1239 [DZ 250]	ZIN 218 (2)	Dark grey fabric
431 [DZ 276]	ZIN 034 (4)	No fabric description
27 [DZ 192]	ZIN 011 (8)	Grey fabric
1105	ZIN 013 (103)	Dark red metallic fabric
1210 [DZ 132]	ZIN 013 (11)	Dark grey fabric
1186 [DZ 106]	ZIN 013 (108)	Black grey fabric
1195 [DZ 105]	ZIN 013 (109)	Black grey fabric
1197 [DZ 144]	ZIN 013 (111)	Grey fabric

Type 323. Jar
Of similar form to that of type 322 it is distinguished from the latter in having a minimally developed flanged lip to the rim. [1066] displays what is almost certainly alternately pivoting stamp impressions. All examples are from Zinkekrā.

CMD No	Context	Other information
	CHA 026/027	
	ELH 006	
1030	ZIN 013 (39)	Zinkekrā fabric/ ø16.8 cm Phase Z2
1093	ZIN 013 (107)	Zinkekrā fabric, RTHM1/ ø14.8 cm Phase Z3
1429	ZIN 013 (50)	Zinkekrā fabric/ ø 13.6 cm/ Phase Z1
1066	ZIN 013 (48)	Zinkekrā fabric; RTHM3/ ø14.8 cm Phase Z1

Type 324. Jar
A necked jar with a flange rim; the flange is generally rounded in sectional profile. The top of the rim most usually carries packed rocker impressed decoration. Of the nine examples, seven are from Zinkekrā, the remainder being from CHA 001 and TIN 001.

CMD No	Context	Other information
1988	CHA 001	Berber red
3630	TIN 001	Berber red
1471 [DZ 324]	ZIN 060	
61 [DZ 193]	ZIN 011 (10)	Berber red
1098	ZIN 013 (32)	Dark grey fabric
10 [DZ 11]	ZIN 013 (1)	Berber red
1466 [DZ 325]	ZIN 060 (4)	Brown fabric, with white flakes
1238	ZIN 013 (108)	Zinkekrā fabric
1442	ZIN 013 (39)	Zinkekrā fabric/ ø 15.2cm/ Phase Z2

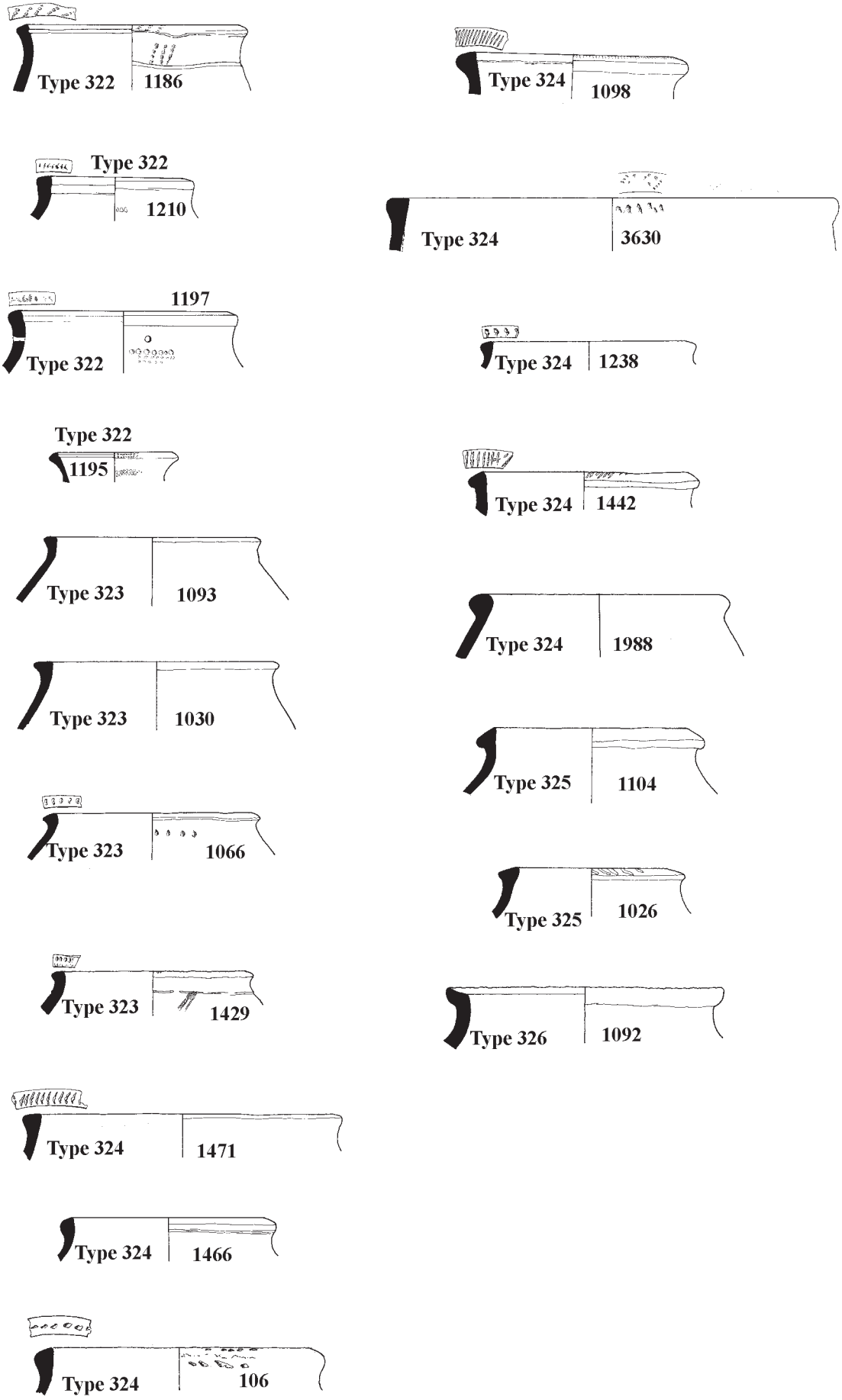


Figure 41.41. Handmade types 322-326. 1:4.

Type 325. Jar
Necked jar. Similar to 324. In contrast to 324 the rim is triangular in sectional profile and has a lid-locating groove on the inner face. All examples are from Zinkekrā.

CMD No	Context	Other information
70	ZIN 011 (20)	Zinkekrā fabric/ ø 34 cm/ Phase Z4
1026	ZIN 013 (53)	Zinkekrā fabric/ ø 12.4cm/ Phase Z1
1104	ZIN 013 (7)	Berber red

Type 326. Jar
Necked, shouldered jar with flanged rim. The flange mostly has a flat top but one example shows a concave, in-sloped face. All examples are from Zinkekrā. The complexity of the form suggests an association with Hellenistic and/or Roman wheel-made forms.

CMD No	Context	Other information
489 [DZ 211]	ZIN 119	Berber red
434 [DZ 287]	ZIN 034 (4)	No fabric description
1447 [DZ 321]	ZIN 060 (3)	Black fabric
1092 [DZ 9]	ZIN 013 (103)	Black fabric

Type 327. Small Jar

CMD No	Context	Other information
1118	ZIN 013 (106)	Zinkekrā fabric/ ø 7.6 cm/ Phase Z4
1146	ZIN 013 (109)	Zinkekrā fabric/ ø 4.8 cm Phase Z2

Type 328. Deep Bowl or Jar

CMD No	Context	Other information
1260	GSC 003	Berber red

Type 329. Deep Bowl or Jar

CMD No	Context	Other information
2646	GER 002 (*4*, 64)	Berber red/ ø 25 cm

Type 330. Jar
Narrow-mouth jar.

CMD No	Context	Other information
	ELH 006 (2)	
1088	ZIN 013 (107)	Zinkekrā fabric; RTHM 1, 7/ ø 8.8cm Phase Z3

Type 331. Jar
Narrow-mouth jar.

CMD No	Context	Other information
3668	TIN 001	Berber red
4195	TWE 001? (5G)	Berber red grey fabric

Type 332. Jar
Narrow-mouth jar.

CMD No	Context	Other information
3563	GBD 001	Dark grey fabric
1443	ZIN 013 (5)	Zinkekrā fabric/ ø 9.2 cm Phase Z1

Type 333. Jar
Globular jar with tall neck; painted decoration. None of the illustrated profiles indicates the form of the lower half of the body. Archive photographs suggest that it was globular and examination of fragments suggests that the manufacturing process consisted of joining together pre-fabricated globular bases and upright necks, and that this rendered the finished vessels susceptible to fracture at the joint. Vessel rims were commonly decorated with incised lines or cord or fabric impressions. The walls of the neck were commonly decorated with cross-hatching in red-brown paint on a white background. It is possible that all the vessels of this type were originally decorated in this way since the decoration, and particularly the white background is rather fugitive. It seems that this style of painting eventually evolved into that commonly seen on Medieval wares. Surviving fragments of globular bases suggest that they were routinely decorated with thick, straight, vertical lines of paint

Many of the examples illustrated were found in Zinkekrā cemeteries, where associations with datable fine- and coarseware would suggest that they date to the 1st and 2nd centuries AD. Occurrence in stratified levels of GER 001 suggests that they were produced and used until the 4th century AD at least. It was the most widely dispersed painted form in the Roman period.

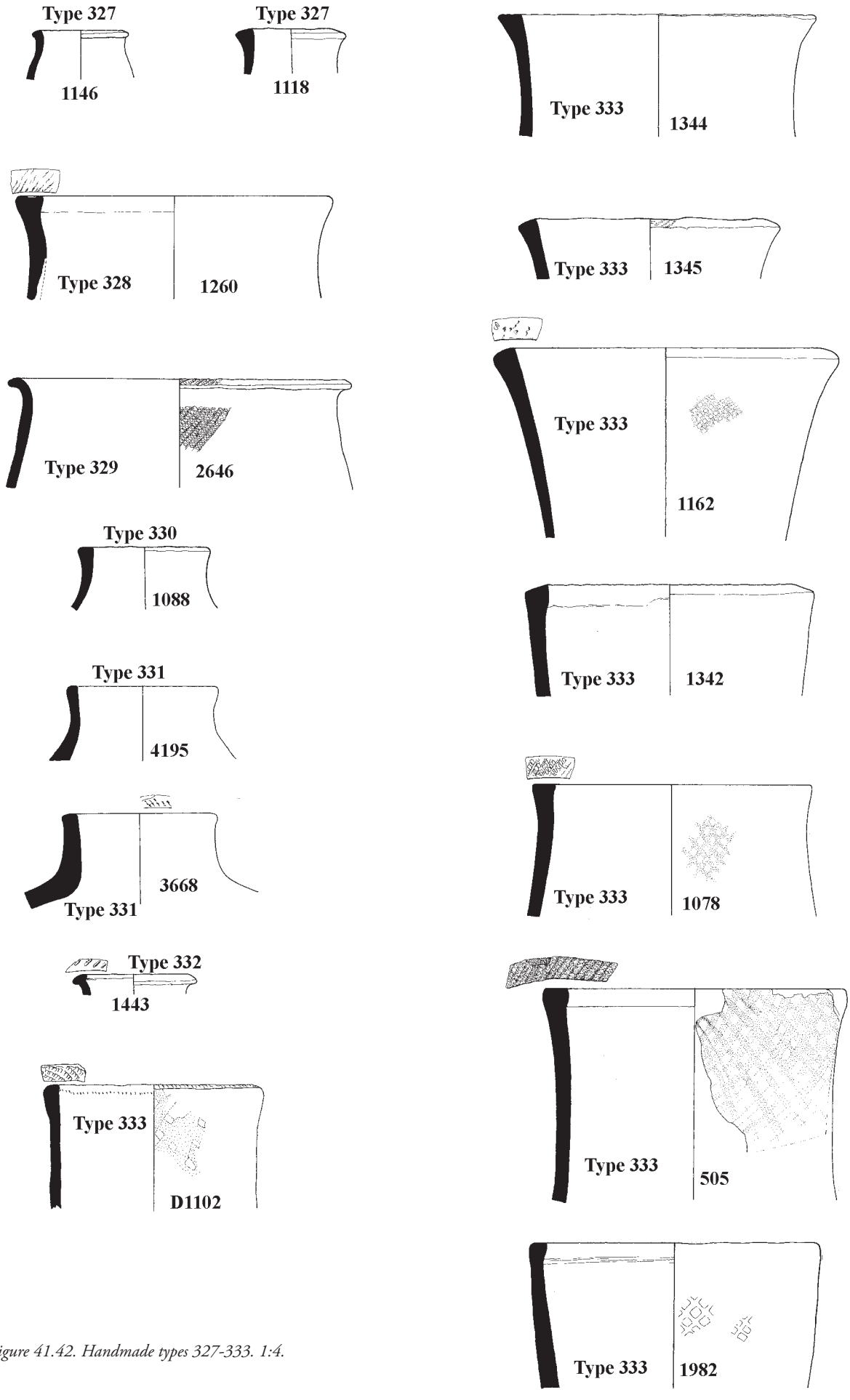


Figure 41.42. Handmade types 327-333. 1:4.

CMD No	Context	Other information
1982	CHA 001	Berber red
1344	GSC 002	Berber red
1345	GSC 002	Berber red
1342	GSC 002	Berber red
1162	GSC 007	Berber red
1078	GSC 007	Berber red
505	ZIN 109	Berber red
559	ZIN 023 (5)	Berber red/ ø 26.2cm
560	ZIN 235	Berber red/ ø 24.4cm
563	ZIN 024	Berber red fabric/ ø 26.4cm
656	ZIN 280 (G)	Berber red/ ø 14 cm
655	ZIN 280	Berber red/ ø 28cm
668	ZIN 280	Berber red/ ø 36 cm
674	ZIN 281	Berber red/ ø 23.6 cm
666	ZIN 280	Berber red/ ø 21.6 cm
1102	ZIN 330 (A)	Berber red/ ø 15.6cm

Type 334. Jar
Globular jar with tall neck; painted decoration. The neck is surmounted with a flange rim of varying length, often in-sloped. Decoration is as on the previous type suggesting that the two are of a broadly similar date. The type does not seem to occur at Zinkekrā though whether this is chronologically significant is hard to determine.

CMD No	Context	Other information
1964	CHA 001	Berber red
1995	CHA 001	Berber red
1970	CHA 001	Berber red
2030	CHA 001	Berber red
3448	CLF 008	Black fabric

Type 335. Jar
Ovoid jars with vertical lug handles and painted decoration.

As far as can be judged the form of the body is ovoid. The rim is short and generally upright or slightly inverted. In some cases it has a slightly concave inner face. At least two lug handles are usually present situated on the shoulder of the vessel and often extending on to the neck and rim. Both the external and internal surfaces of the rim can be painted with a white ground over which are vertical red-brown lines. The external body can be similarly covered and can also bear incised inverted V-shaped motifs. The best dating evidence comes from Sāniat Jibrīl (GER 002) and suggests that the type emerged in the 3rd-4th centuries AD.

CMD No	Context	Other information
3422	CLF 002	Dark grey fabric
2416	GER 002 (*4*, 26)	Fabric hrbps/ ø 22.2 cm
2278	GER 002 (*4*, 26)	Fabric hrbp; RTHM3/ ø19.2 cm
	RUG 023	Cf 2278
2859	GER 002 (*7*,70)	Berber red/ ø 23 cm
3856	GRE 001	Black fabric with quartz
3836	GRE 001	Berber red
3847	GRE 001	Grey fabric
3857	GRE 001	Berber red
4020	LEK 007	Dark brown fabric
3741	RUG 003	Berber red black fabric
3754	RUG 003	
3528	ZOU 002	Black fabric with white inclusions
3458	ZOU 006	Black fabric
3486	ZOU 006	Berber red
3488	ZOU 006	Berber red
3520	ZOU 009	Black fabric
3718	ZOU 011	Black fabric

Type 336. Handled Cup (incense burner?)
No 3439 is more likely to date to the Medieval or post-Medieval period as the incised decoration and the position of the top joint of the handle (below the rim) are similar to modern forms. It is possible that they were used as incense burners.

CMD No	Context	Other information
3518	Jarma area?	
3439	Jarma area?	

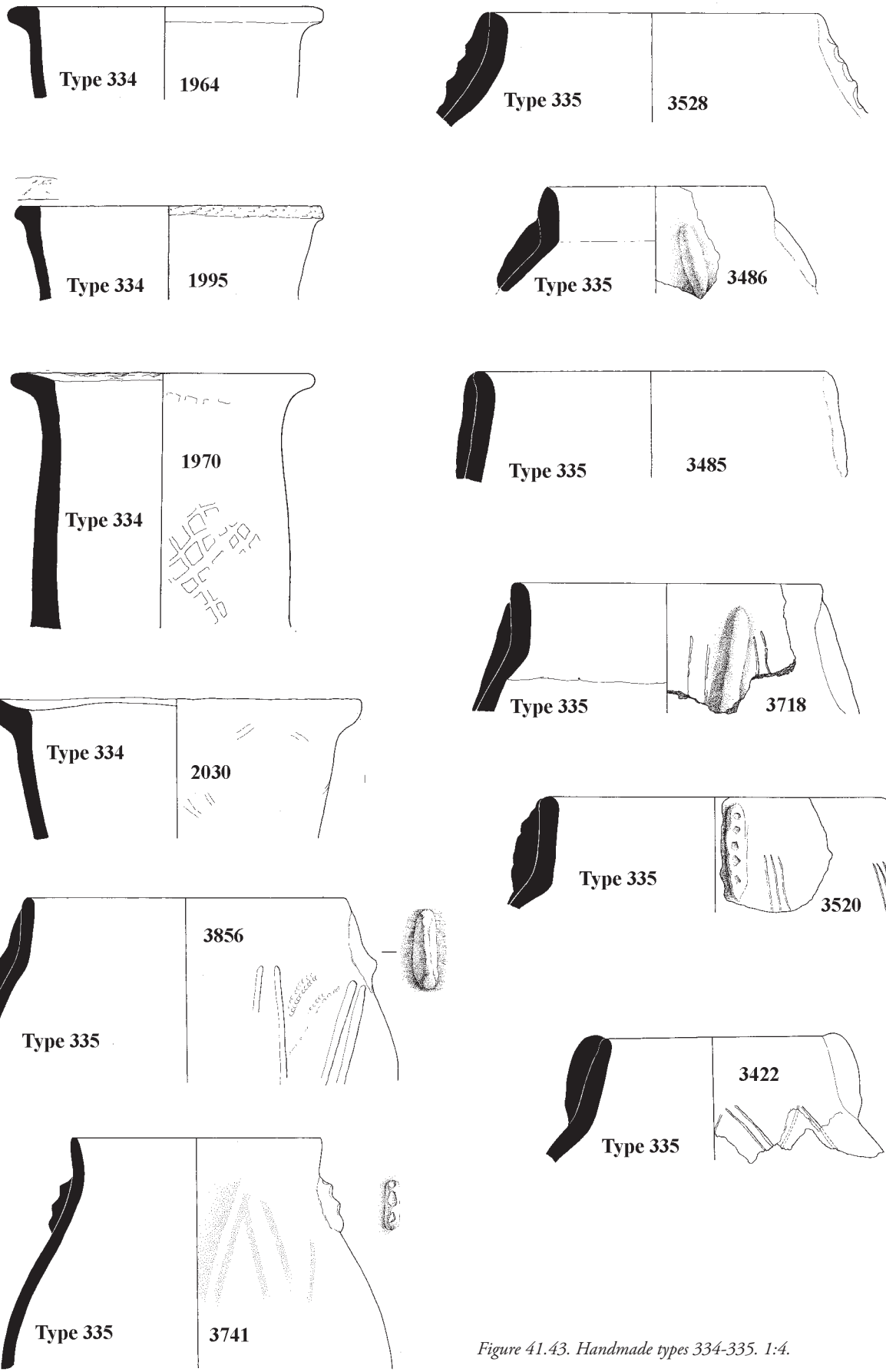


Figure 41.43. Handmade types 334-335. 1:4.

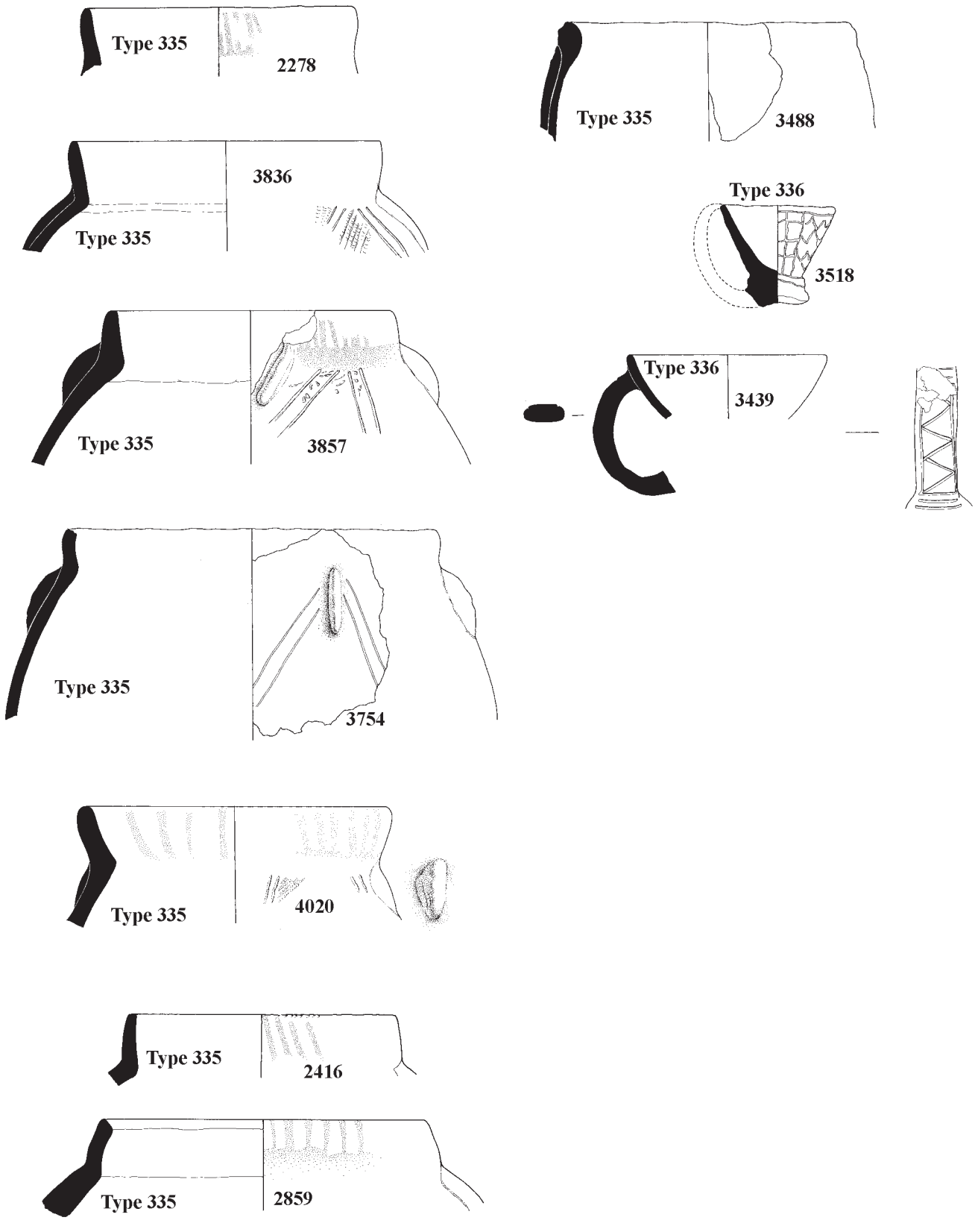


Figure 41.44. Handmade types 335 (cont)-336. 1:4.

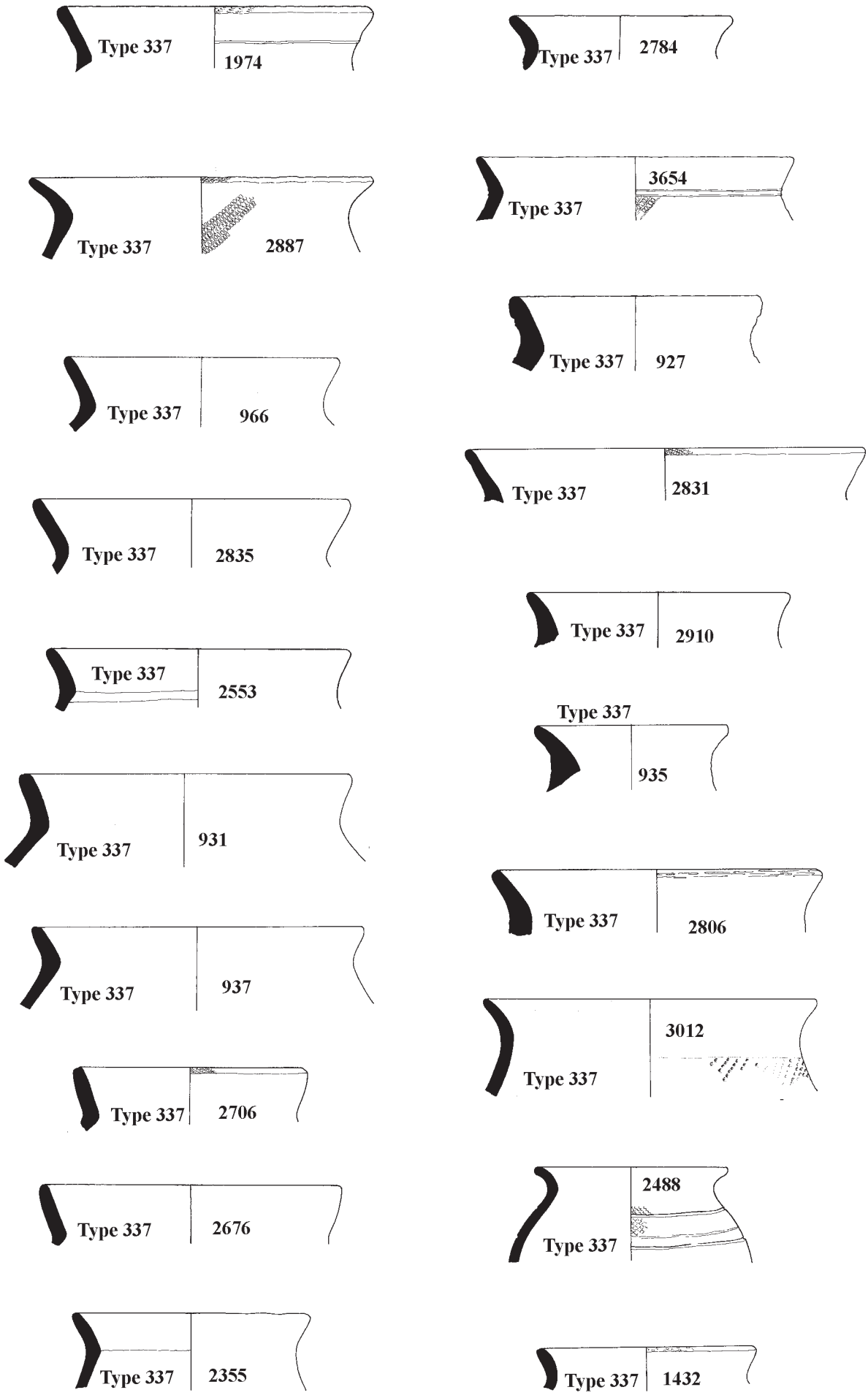


Figure 41.45. Handmade type 337. 1:4.

Types 337-340. Jars

These are very common types. They are characterised by everted rims and globular bodies. They are commonly decorated with cord impressions, although incised lines and paint can also occasionally be found. They are very common at Sāniat Jibrīl (GER 002) and in 1st- to 4th-century levels at GER 001.

Type 337. Jar
Globular jar, simple everted rim; the rim is of constant thickness or tapering but not thickened or beaded; for the most part the rim is straight but in some cases it is outcurved.

CMD No	Context	Other information
1974	CHA 001	Berber red
	CHA 001	
	ELH 005	
	ELH 006	
	ELH 006	
	ELH 008	
3012	FJJ 006	Berber red
935	GER 002 (*1*, 4);	Berber red; RTHM 7/ ø 14 cm
931	GER 002 (*1*, 3)	Berber red/ ø 24 cm
927	GER 002 (*1*, 3);	Berber red; RTHM1/ ø 18.5 cm
2706	GER 002 (*2*, 76)	Berber red/ ø 16.7 cm
2676	GER 002 (*2*, 76)	Berber red/ ø 21.5 cm
2910	GER 002 (*2*, 76)	Berber red; RTHM1; RTHM3/ ø 19cm
2835	GER 002 (*2*, 27)	Berber red/ ø 23 cm
2553	GER 002 (*4*, 88)	Berber red/ ø 22.2 cm
966	GER 002 (*4*, 2/6)	Berber red/ ø 20 cm
2895	GER 002 (*4*, 92)	No fabric description
2831	GER 002 (*6*, 24)	Berber red/ ø 29 cm
2461	GER 002 (*6*, 14)	Berber red/ ø 15 cm
2488	GER 002 (*6*, 14)	Berber red; RTHM3/ ø 18 cm
2598	GER 002 (*6*, 19)	Berber red/ ø 28 cm
2887	GER 002 (*6*, 21)	Berber red / ø 25 cm
2784	GER 002 (*6*, 24)	Berber red/ ø 16.4 cm
2806	GER 002 (*6*, 24)	Berber red/ ø 24 cm
2355	GER 002 (*7*, 1)	Berber red; RTHM1/ ø 17.4 cm
2772	GER 002 (*7*, 24)	Berber red/ ø 19.3cm
937	GER 002 (*1*, 4)	Berber red; RTHM3, RTHM2/ ø 24.3 cm
	GER 027	
	GSC 006	
	LEK 017	
	RUG 021	
3654	TIN 001	Grey fabric
1432	ZIN 013 (39)	Zinkekrā fabric/ ø 15.6 cm Phase Z2

Type 338. Jar
Globular jar, straightish or outcurved everted rim, with a beaded lip.

CMD No	Context	Other information
	CHA001	
	GER 002	
933	GER 002 (*1*, 1)	Berber red/ ø 24 cm
922	GER 002 (*1*, 4)	Beber red/ ø 23 cm
930	GER 002 (*1*, 3)	Berber red/ ø 19.4 cm
921	GER 002 (*1*, 4)	Berber red/ ø 23 cm
2853	GER 002 (*2*, 67)	Berber red/ ø 19 cm
2608	GER 002 (*2*, 67)	Berber red/ ø 17 cm
2911	GER 002 (*4*, 101)	Berber red/ ø 19 cm
2674	GER 002 (*6*, 21)	Berber red/ ø 18 cm
2394	GER 002 (*6*, 10)	Berber red; RTHM4; RTHM 3/ ø 24 cm.
2704	GER 002 (*6*, 19)	Berber red/ ø17 cm
2695	GER 002 (*6*, 21)	Berber red/ ø 14.2 cm
2840	GER 002 (*6*, 24)	Berber red/ ø 18.2cm
2822	GER 002 (*6*, 24)	Berber red; RTHM3/ ø 29 cm
2623	GER 002 (*6*, 9)	Berber red/ ø 16 cm
	GER 016	
	RUG 022 (2)	

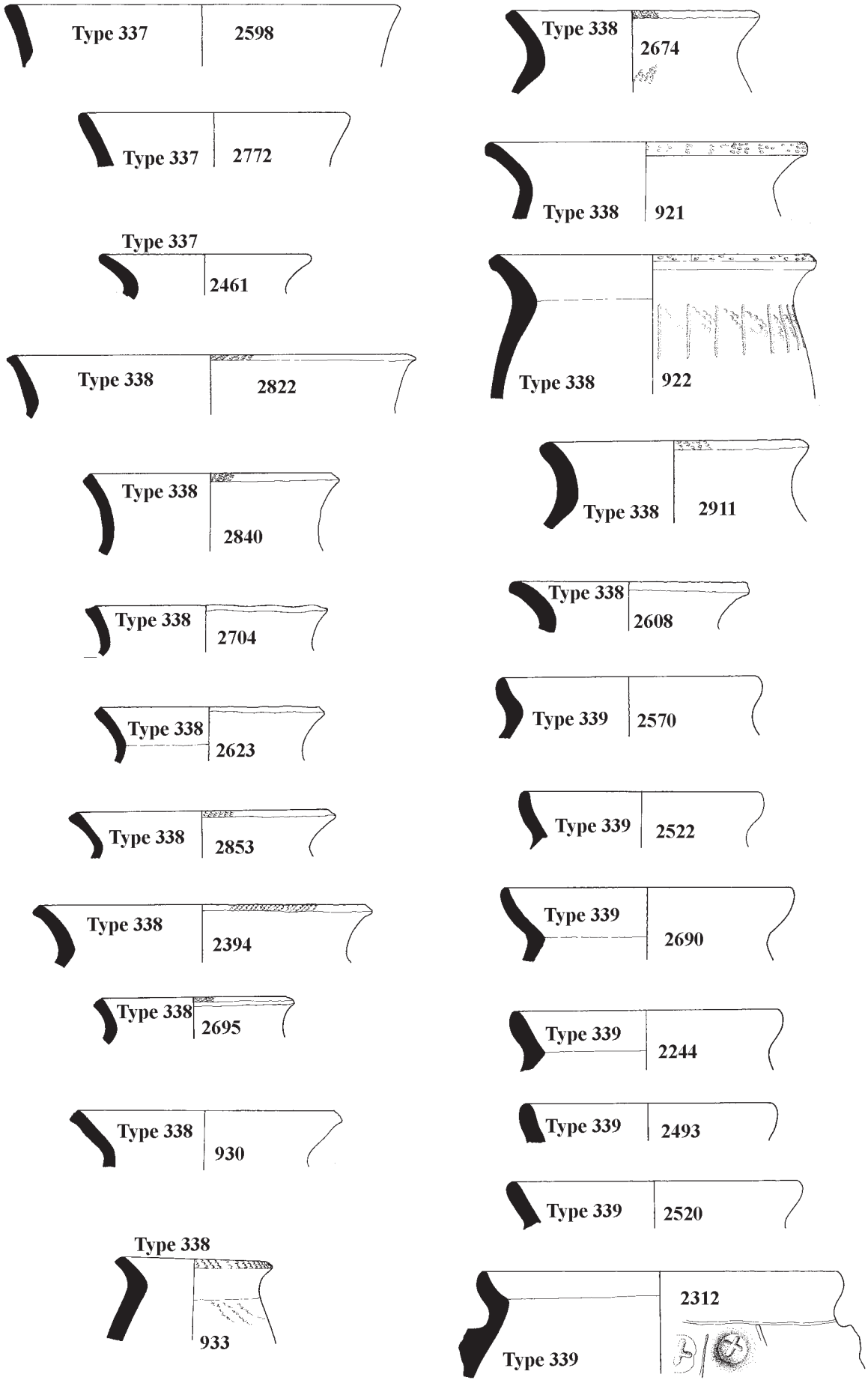


Figure 41.46. Handmade types 337 (cont)-339. 1:4.

Type 339. Jar
Globular jar, everted rim; the whole rim is essentially 'cupped' to seat a lid.

CMD No	Context	Other information
	CHA 026	
2570	GER 002 (*2*, 67)	Berber red/ ø 18.5 cm
2690	GER 002 (*2*, 77)	Berber red/ ø 20.5 cm
2244	GER 002 (*2*, 13)	Berber red/ ø 19.5 cm
2493	GER 002 (*2*, 57)	Berber red/ ø 18 cm
2520	GER 002 (*2*, 57)	Berber red; RTHM3/ ø 20.5 cm
2522	GER 002 (*2*, 57)	Berber red; RTHM1; RTHM3/ ø 17cm
2312	GER 002 (*4*, 26)	Hbrp fabric/ ø 25.5 cm
	GER 004	
	GER 004	

Type 340. Jar
Globular jar, rim more markedly everted than 337-339; the upper face of the rim is slightly relieved to seat a lid.

CMD No	Context	Other information
2269	GER 002 (*1*, 1)	Berber red
2541	GER 002 (*2*, 57)	Berber red/ ø 20 cm
2845	GER 002 (*6*, 24)	Berber red/ ø 22.4 cm
2572	GER 002 (*6*, 9)	Berber red/ ø 17 cm/
3642	TWE area	Dark fabric with white flecks

Type 341-343. Dokas

This type has been recorded in many parts of North Africa. The examples listed below come mainly from Sāniat Jibrīl, but vessels are also known from Zinkekrā, where they are likely to date to the 1st century BC or 1st century AD. A more precise chronology should be available after full study of the pottery from the Fazzān Project's excavations at GER 001. The type seems to have appeared in Roman period, and it was very common from the 2nd-3rd century AD and particularly in the early Medieval period (it seems to be absent from later Medieval and Modern contexts). In the Sudan the type does not seem to appear before the 1st millennium AD (Edwards 1996, 74) and thereafter is found in all periods after the Meroitic (Adams 1986, 158). Sudanese dokas are never decorated (Adams 1986, 158), but one of the fragments from the excavations at GER 001 bears a painted decoration, with red lines and dots on a white surface (with some traces left on the rim).

It has been suggested from the absence of specific ovens for bread-making that dokas were used to cook bread (Edwards 1996, 75). The bases of our vessels, however, show clear impressions of straw matting but no indications of direct contact with fire. We might suggest, therefore, that the food was cooked by locating the vessels in the vicinity of the source of heat rather than placing it directly on the fire. The presence of decoration might suggest that they were used to serve food.

Three sub-types can be distinguished:
Type 341 is very shallow with a barely developed lip.
Type 342 has a plain, upturned flange rim.
Type 343 has a more or less developed bead and flange rim.

Type 341. Doka
All examples are from ZIN 013 or TIN 001.

CMD No	Context	Other information
3655	TIN 001	Berber red
3638	TIN 001	Brown fabric with quartz
3673	TIN 001	Grey fabric
1099 [DZ 25]	ZIN 013	No fabric description

Type 342. Doka
Most examples are from GER 002.

CMD No	Context	Other information
2347	GER 002 (*7*, 2)	No fabric description
2286	GER 002 (*7*, 2)	Hbf/ ø 23.4 cm Phase Z2
2399	GER 002 (*4*, 26)	No fabric description
3700	TIN 001	Berber red

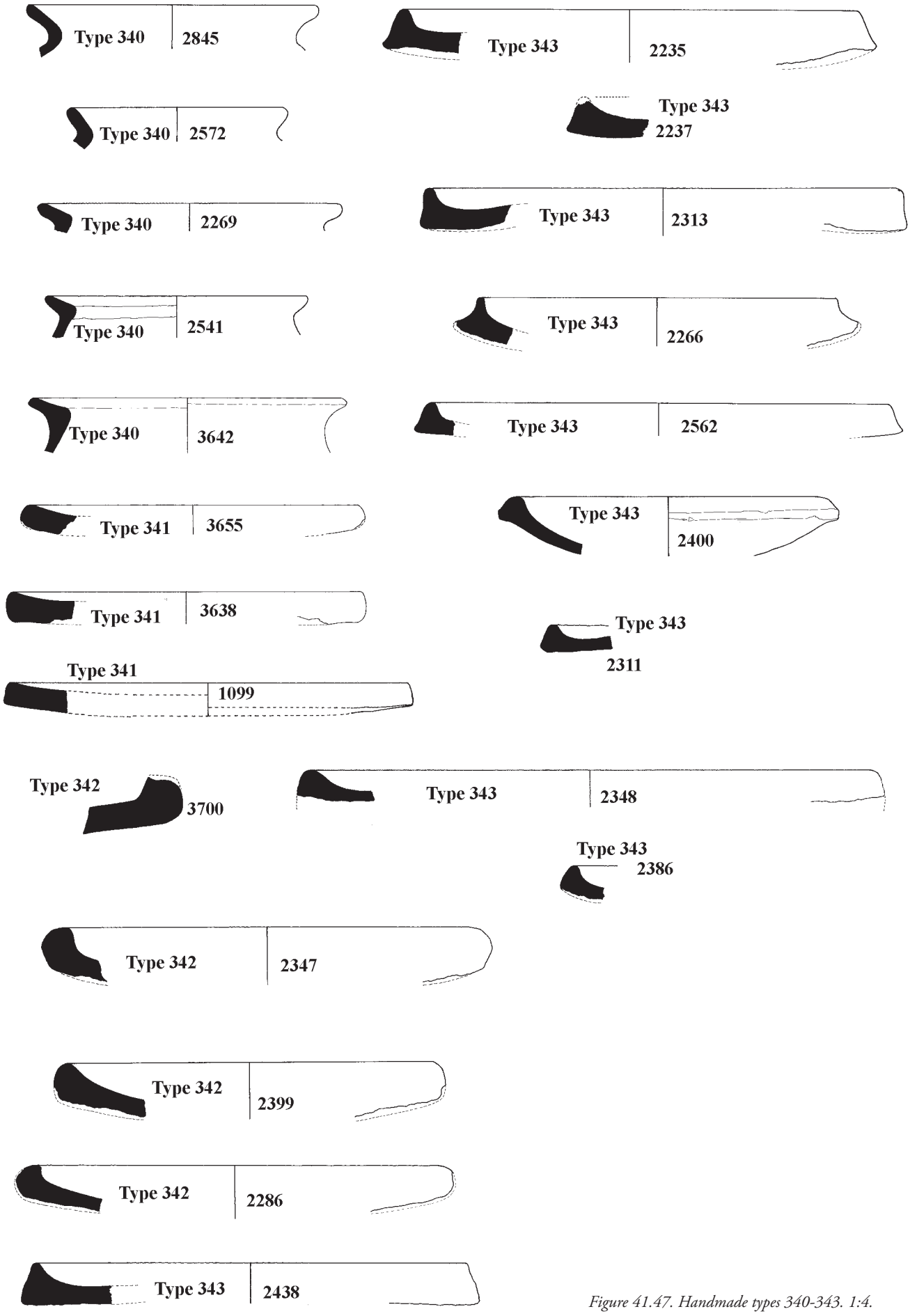


Figure 41.47. Handmade types 340-343. 1:4.

Type 343. Doka
Most examples are from GER 002.

CMD No	Context	Other information
	ELH 006	
	ELH 005	
2531	GER 002 (*2*, 28)	Hblf/ ø 24.4 cm
2313	GER 002 (*2*, 3)	Hb Phase 1
2438	GER 002 (*2*, 33)	Berber red/ ø 33 cm Phase 2
2562	GER 002 (*2*, 56)	Hblf/ ø 35 cm Phase 2
2235	GER 002 (*4*, 26)	Hb. Phase 3
2266	GER 002 (*4*, 13)	Brown fabric with white flecks
2311	GER 002 (*4*, 13)	Hg; RTHM5
2386	GER 002 (*4*, 19)	Black fabric
2348	GER 002 (*4*, 26)	Hblf; RTHM3/ ø 43.6 cm. Phase 3
2400	GER 002 (*4*, 26)	No fabric description
	GER 016	

Type 345-348. Bowls and dishes with plain rims

Occurrence of the majority on GER 002 suggests a date range of 1st – 4th century AD.

Type 345. Small Bowl
Small hemispherical bowls with plain rim.

CMD No	Context	Other information
	GBD 002	
2505	GER 002 (*2*, 38)	Berber red; RTHM3/ ø 20.5 cm. Phase 3
2809	GER 002 (*4*, 100)	Berber red/ ø 21 cm. Phase 2
2411	GER 002 (*4*, 26)	Berber red; RTHM3
2317	GER 002 (*6*, 2)	Berber red; RTHM1
	GER 026	
	ZOU 001	
	ZOU 001	

Type 346. Small to Medium Bowl or Dish
Small and medium bowls and dishes. The upper wall is generally straighter than in previous type. There is a suggestion of a carination in the wall of some of them. The lip of the rim is also very slightly thickened in many of the examples – to the extent of developing a very slight bead on many of them.

CMD No	Context	Other information
	BBA 015	
	CHA 001	
	CHA 001	
3017	FJJ 006	Berber red
	GBD 021	
	GEL 027	
2248	GER 002 (*2*, 11)	Black fabric; RTHM 1
2468	GER 002 (*2*, 33)	Berber red
2557	GER 002 (*4*, 65)	Berber red; RTHM3/ ø 29 cm. Phase 2
2240	GER 002 (*4*, 26)	Berber red/ ø 25cm. Phase 3
2637	GER 002 (*4*, 30)	Berber red
2848	GER 002 (*4*, 24)	Black fabric
2670	GER 002 (*6*, 9)	Berber red/ ø 28.8 cm. Phase 2
2377	GER 002 (*7*, 1)	Berber red; RTHM 12. Phase 2
2388	GER 002 (*7*, 2)	Berber red

Type 347. Small to Medium Bowl or Dish
Small and medium sized bowls and dishes in which the lips of the rims are developed in some way, either thickened, beaded or moulded. All of them are quite similar in size and general shape.

CMD No	Context	Other information
3433	CLF 008	Berber red
2851	GER 002 (*4*, 24)	Berber red; RTHM3; RTHM 12
979	GER 002 (*4*, 1, 4-5)	Berber red
2358	GER 002 (*4*, 26)	Berber red; RTHM3/ ø 19 cm. Phase 3
2662	GER 002 (*6*, 9)	Berber red
	GER 004	
3848	GRE 001	Dark fabric
	RUG 022	
	ZOU 001	
	ZUL 010	

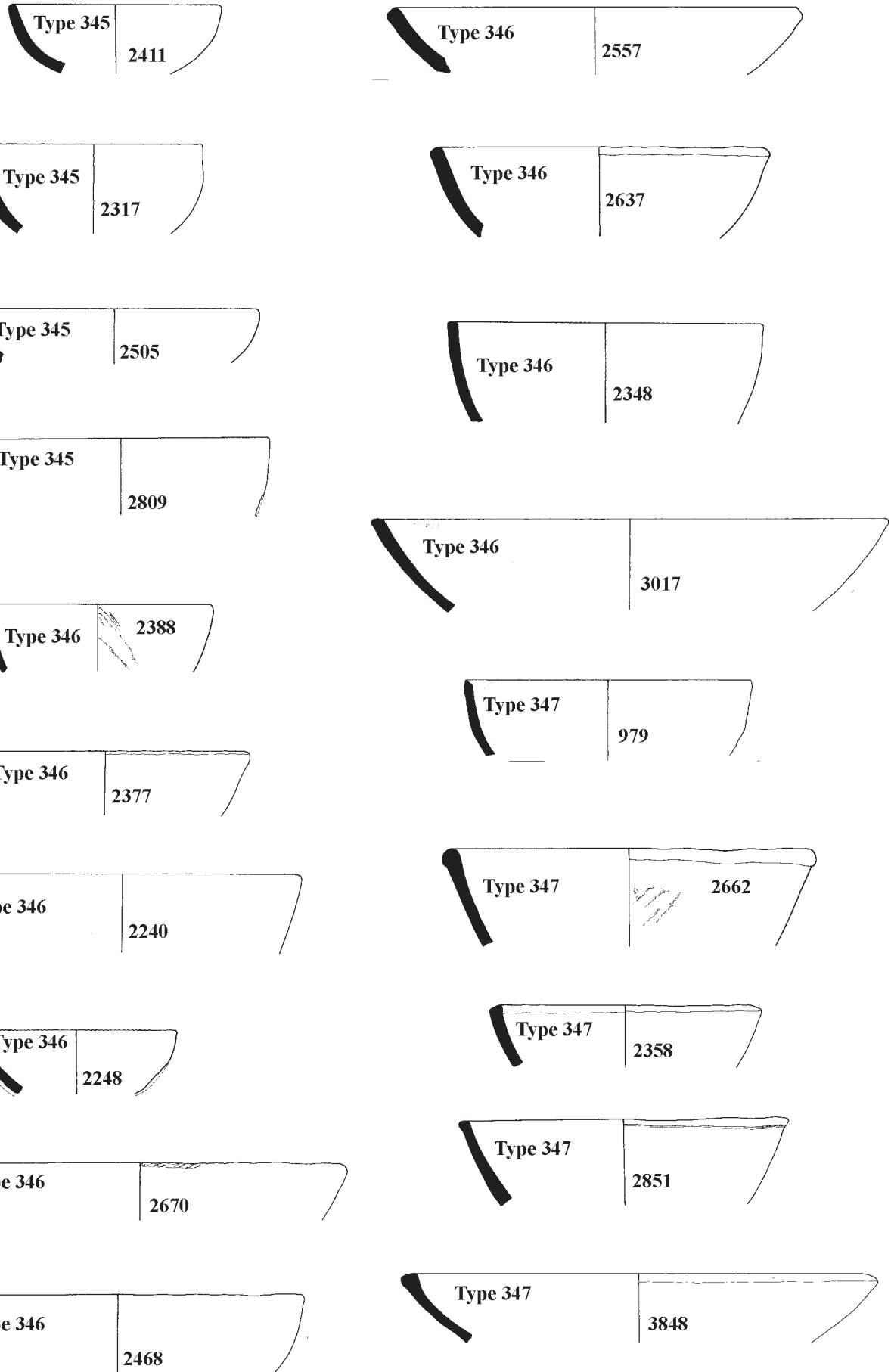


Figure 41.48. Handmade types 345-347. 1:4.

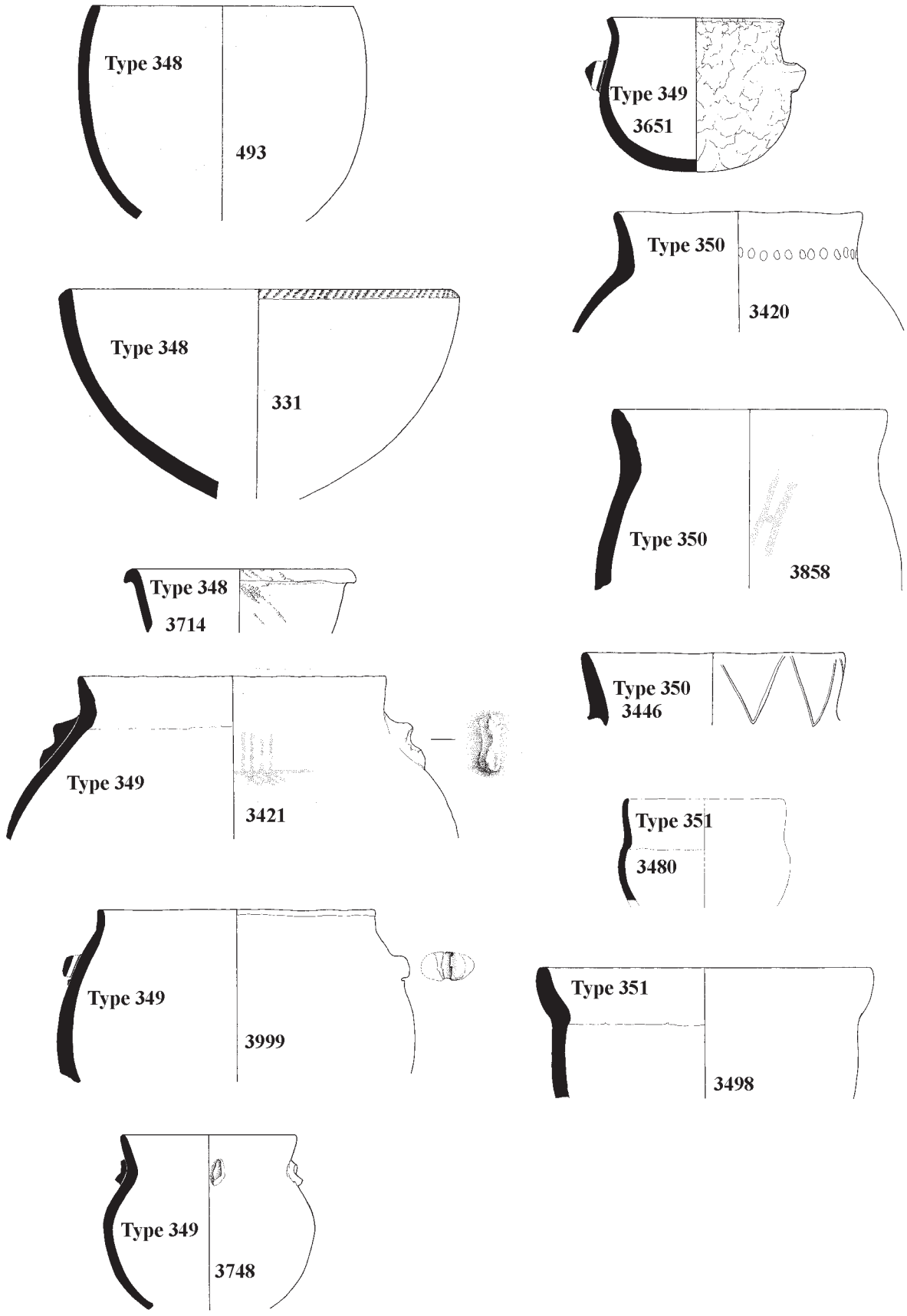


Figure 41.49. Handmade types 348-351. 1:4.

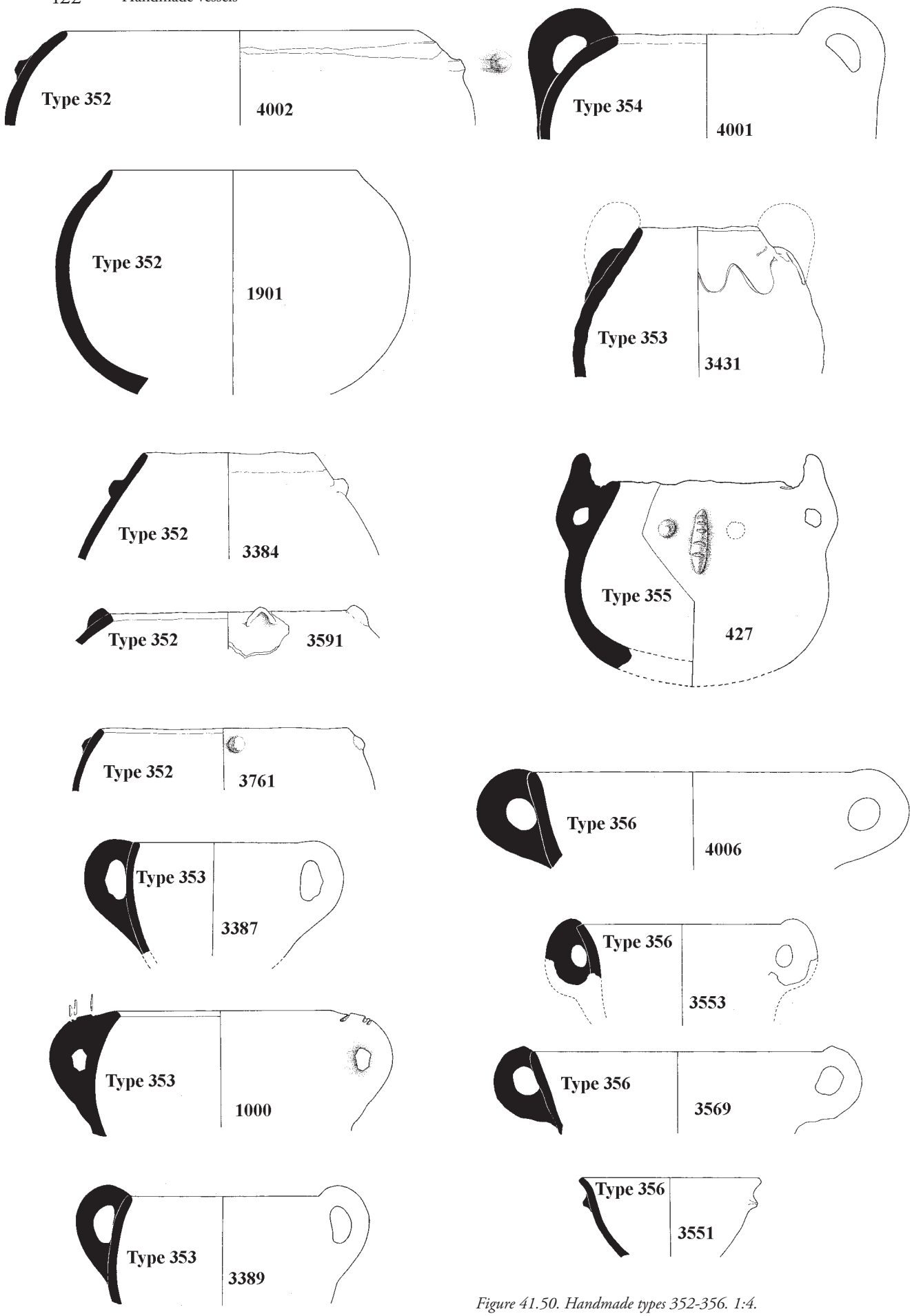


Figure 41.50. Handmade types 352-356. 1:4.

Type 348. Miscellaneous Vessels
Miscellaneous vessel not assigned elsewhere

CMD No	Context	Other information
331	FJJ 002	No fabric description
493 (JD)	ZIN 001-003	No fabric description
3714	ZOU area	No fabric description

Types 349-360 Possibly post-Garamantian forms

The occurrence of these types in the upper stratigraphy of the Fazzān Project's excavations at GER 001 suggests that they may be of Islamic or early modern date (i.e. 15th – 20th century), though many of the sites where surface finds were collected are in fact Garamantian. It is conceivable that future excavation will confirm a Garamantian origin for some of them. The issue will be more fully discussed in the publication of the pottery from the Jarma (G1) excavations in *AF 4*.

Type 349. Jar
Miscellaneous Everted rim jars, possibly Islamic or Early Modern.

CMD No	Context	Other information
3421	CLF 002	Grey fabric
	FJJ 006	
3999	LEK 001	Grey fabric with quartz and white chalk
3748	RUG 003	Black berber fabric
3651	TIN 001	Berber red

Type 350. Jar
Miscellaneous Everted rim jars, possibly Islamic or Early Modern.

CMD No	Context	Other information
3420	CLF 002	Blackish fabric
3446	CLF 002	Dark fabric with white chalk
3056	FUG 003	Berber red
3858	GRE 001 (176)	Black fabric with quartz

Type 351. Jar
Jars with tall rims for lid-seating.

CMD No	Context	Other information
3444	CLF 002	Black fabric
3480	ZOU area	Berber red
3498	ZOU area	Berber red

Type 352. Jar
Miscellaneous deep jars with inturned rims.

CMD No	Context	Other information
3761		
3384	CLF 002	Blackish grey hard fabric
	ELH 006	
1901	FUG 001	Black fabric with white chalk
4205	FUG 009	No fabric description
	GER 003	
4002	LEK 001	Dark, black fabric
3591	TIN 001	Berber fabric, black grits, white chalk
1276 [DZ 295]	ZIN 087	Berber red; RTHM3

Type 353. Deep Jar
Deep jars with slightly inturned rims and large, lug handles.

CMD No	Context	Other information
3389	CLF 002	Black ashy fabric
3387	CLF 002	Black berber fabric
1000	TWE 001	Grey fabric

Type 354. Jar
Jars with markedly in-turned rims and large, lug handles upstanding above the rim.

CMD No	Context	Other information
3431	CLF 002	Dark grey fabric
4001	LEK 010	Grey fabric with white chalk

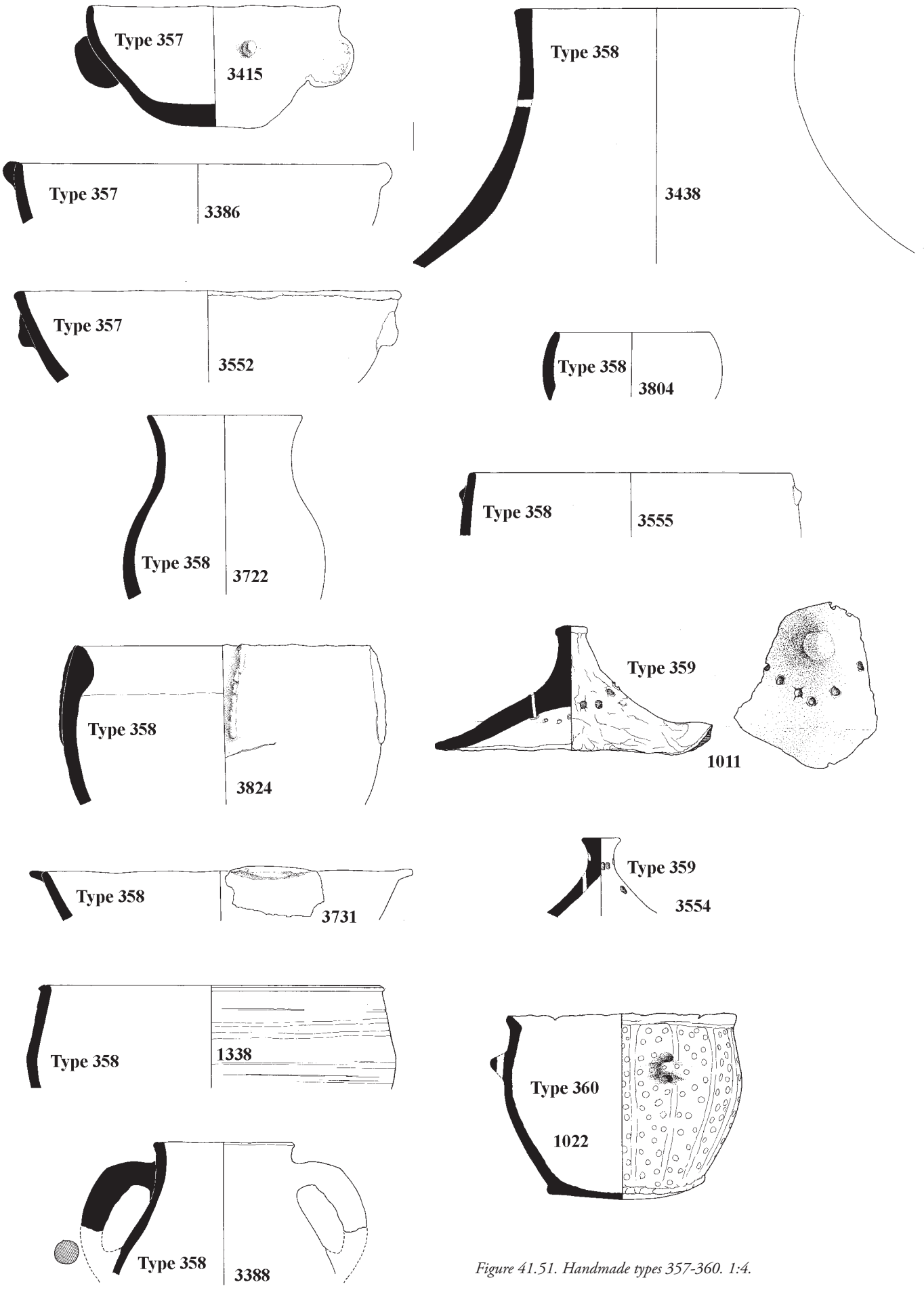


Figure 41.51. Handmade types 357-360. 1:4.

Type 355. Jar
Round-bottom jars with inturned rims and large handles with peaked lugs - 'Genie Pots'. These vessels have a 'face' on the outer wall consisting of an elongated lug between two round lugs.

CMD No	Context	Other information
	GER 015	
	GER 027	
	GER 002	
3790	TAG 020	
427	ZIN 109 (12)	Berber red; RTHM3
671	ZIN 280 (1)	Zinkekrā fabric/ ø 14.8 cm

Type 356. Bowl
Handled bowls with ring handles

CMD No	Context	Other information
3569	GBD 002 (26)	Berber red fabric with white chalk
3553	GEL 002	Black berber red fabric
3551	GEL 002	Black berber red fabric
4006	LEK 001	Berber red

Type 357. Bowl
Handled bowls with lug handles.

CMD No	Context	Other information
3886	CLF 002	Grey fabric
3415	CLF 002	Berber red
3552	GEL 002	Berber red black hard fabric

Type 358. Miscellaneous Jars or Bowls

CMD No	Context	Other information
3804	CHA 007 (S)	No fabric description
3438	CLF 002	Berber grey fabric
3388	CLF 002	Black berber fabric
3423	CLF 002	Grey fabric
3555	GEL 003	Black fabric with white chalk
1338	GSC 002	Dark fabric
3824	LEK 009	Berber red
3722	RUG 001 (G)	No fabric description
3731	RUG 001	Berber red
432 (JD)	ZIN 001-003	Non fabric description
495	ZIN 105 (5)	Black fabric

Type 359. Lids

CMD No	Context	Other information
	CHA 031	
	ELH 005	
	ELH 006	
4204	FUG 009	Berber red
3558	GEL 004	Berber red
1101	ZIN 001-003	Berber red; RTHM1

Type 360. Jar
Everted rim jar with painted decoration. This kind of decoration only appears in the post-medieval levels of the excavations at GER 001. The decoration is very consistent and consists of dots and straight lines, either white on a red ground or red on a white ground.

CMD No	Context	Other information
1022	GSC 010 (SP)	

PART F. MESOLITHIC/ NEOLITHIC POTTERY

by J. N. Dore

Introduction

The assemblage consists of 41 fragments representing *c.* 22 vessels from 9 contexts. Table 41.15 shows the relationship between catalogue number and contexts. All except no. 5 were recovered from the surface.

Table 41.15. Contexts of recorded sherds of mesolithic/ neolithic pottery

Catalogue No.	Site/Context
1, 2	TWE 021
3, 4	EDU 005
5	EDS 015
6, 7, 8, 9	EDU 018
10, 11	EDU 022
12, 13, 14, 15	EDU 026
16	GER 030
17, 18	GER 033
19, 20, 21	GRA 002

Discussion

The evidential basis for the date assigned to each piece is presented below. Table 41.16 summarises this.

Table 41.16 Evidential basis for assigned dates of mesolithic/ neolithic sherds

Cat. No.	Date	Evidential Basis
2	Mesolithic	Decorative Type
21	?Mesolithic-Early Neolithic	Decorative Type
5	Middle Pastoral	Standard of Manufacture
7	Middle Pastoral	Standard of Manufacture
8	Middle Pastoral	Standard of Manufacture
1	Middle Pastoral +	Presence of neck
10	Middle Pastoral +	Complex form & Standard of Manufacture
13	Middle Pastoral +	Akākūs parallel
14, 17	Middle Pastoral +	Fabric parallel (no 13)
19	Middle Pastoral +	Presence of neck
9	Middle-Late Pastoral	Akākūs parallel
15	?Late Pastoral	Late Pastoral parallel from Akākūs
12	?Late Pastoral - Garamantian	Zinkekrā parallel
16	Unknown	
3	Unknown	
4	Unknown	
6	Unknown	
11	Unknown	
18	Unknown	
20	Unknown	

Mesolithic – Early Neolithic

Catalogue No. 2.
There are good early Holocene associations for this kind of decoration which is characterised by rounded waves of multiple-line rows produced by rocker combs. In Sudanese contexts Caneva (1987, 248) notes its use on unburnished pottery (as here) and its association with Mesolithic lithic tool-kits, and contrasts it with a later type, which is characterised by short and sharp waves of pairs of dotted lines produced by simpler, two-pronged, alternately pivoting stamps, and found on burnished pottery associated with Neolithic assemblages. In the Wān Afūda cave in the Tadrart Akākūs the type appears in the later of two early Holocene occupations (characterised by the excavators as 'Mesolithic' or 'Late Akākūs' Hunter-Gatherers) dated to 9000-8000 BP (di Lernia 1998, fig. 15, no. 4). At Nabta Playa, recent work has recovered 'Dotted Wavy Line' pottery from Early Neolithic contexts (Nelson *et al.* 2002). Its earliest associations at Nabta seem to be with the El Nabta phase (Gatto 2002, table 5.5 and table 5.7 where the context is associated with a C^{14} date of 7785 bp +/- 115. Nelson 2002, fig. 2.1 showing the type present in the El Ghorab phase seems to be an error to judge from the evidence presented in the rest of the volume).

Catalogue No. 21.
The closely packed horizontal bands of rocker-stamped decoration suggest an early date for this piece. Similar packed decoration occurs on pottery from the Mesolithic/ Late Akākūs horizon at Wān Afūda (di Lernia 1998, figs. 15 and 16). In the Nabta-Kiseiba area of the Eastern Sahara a similar decorative scheme ('Halina' type) seems to be restricted to deposits of the El Nabta phase dated to the 8th millennium bp (Gatto 2002, tables 5.5 and 5.7).

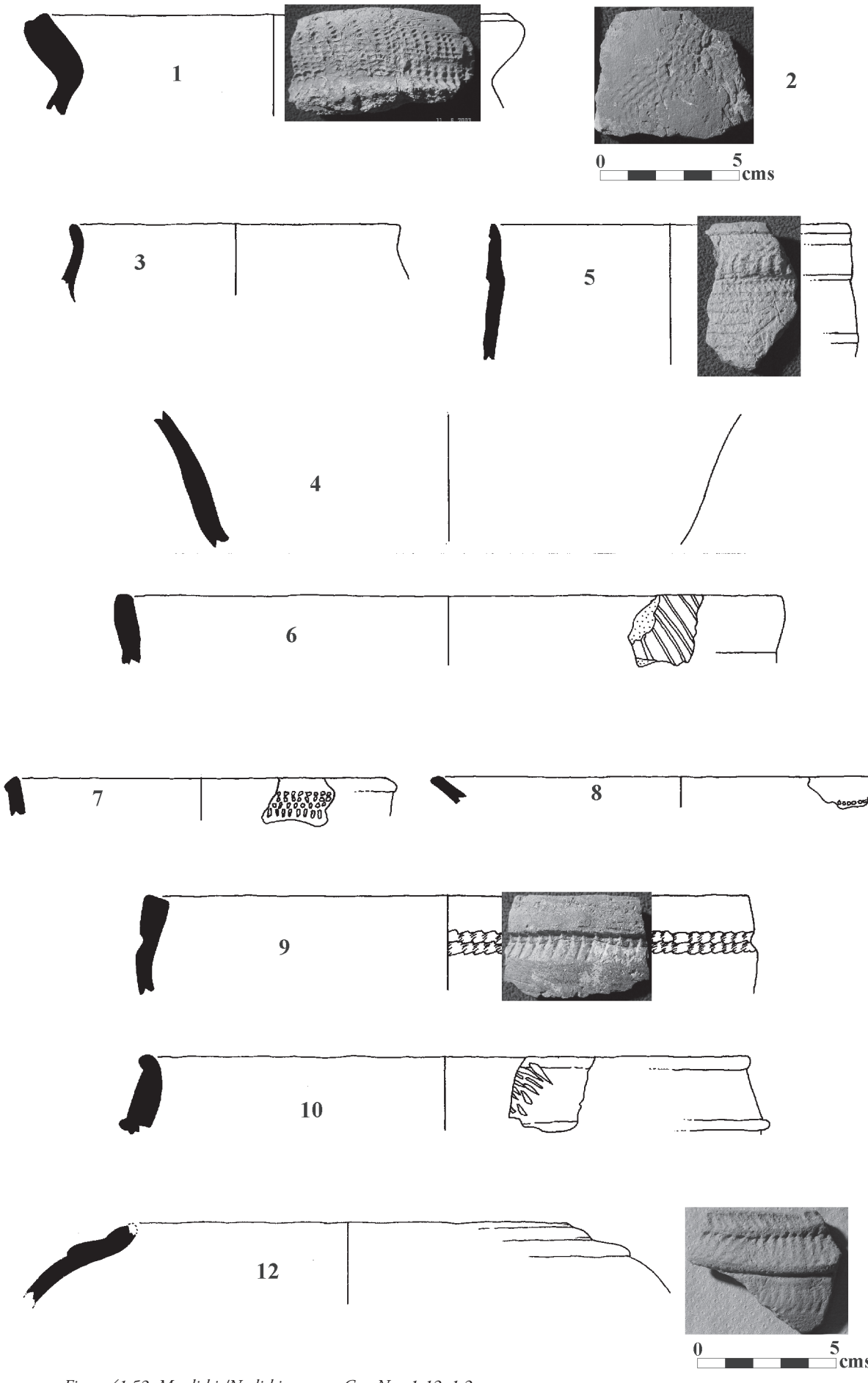


Figure 41.52. Mesolithic/Neolithic pottery. Cat. Nos. 1-12. 1:2.

Middle Pastoral (+)

Catalogue No. 5.
The thinness of the fabric, the use of a complex form and high standard of manufacture suggest that this vessel dates at least to the Middle Pastoral phase. Similar vessel forms and similar schemes of packed rocker decoration are known from the Wān Talīkīt rock-shelter in the Tadrart Akākūs where the principal pottery bearing levels are dated to the 6th millennium BP (Garcea and Sebastiani 1998, fig. 7 and fig. 8, no. 1).

Catalogue Nos. 7. and 8.
These are quite small sherds but as with no. 5, the thinness of the fabric and high standard of manufacture suggest that they date at least to the Middle Pastoral phase

Catalogue No. 1.
There are indications that the introduction of necked forms does not occur until at least the 6th millennium BP (Ponti *et al.* 1998, 191). Similar everted-rim jars with grooved lips occur at Zinkekrā in a not dissimilar fabric (Daniels 1968, no. 302).

Catalogue No. 10.
The complex vessel form and high standard of manufacture suggests at least a Middle Pastoral date.

Catalogue No. 13.
Vessels with the same distinctive attributes (constricted girth; tall, flaring mouth; two narrow horizontal bands of plain rocker impression just below the constriction) are known from Middle Pastoral contexts in the Tadrart Akākūs (Cremaschi and di Lernia 1998, fig. 41).

Catalogue Nos. 14. and 17.
The style of manufacture (thickness of the vessels wall and the fabric colour and texture) is very similar to no. 13.

Catalogue No. 19.
The necked form of the vessel rim seems unlikely to date to before the Middle Pastoral (see no. 1), though these sherds posses certain attributes (relative thickness and exclusive use of rocker technique) which have been identified by di Lernia (1998, 138) and Ponti *et al.* (1998, 198) as more characteristic, in the ceramic assemblages of the Tadrart Akākūs, of the Mesolithic and early Pastoral than of the Middle and Later Pastoral.

Middle – Late Pastoral

Catalogue No. 9.
Similar deeply impressed plain rocker decoration is known on vessels from the Wān Talīkīt rock-shelter in the Tadrart Akākūs where the principal pottery bearing levels are dated to the 6th millennium BP (Garcea and Sebastiani 1998, fig. 8, no. 8). Similar bowls with inturned and thickened rims are common in the Zinkekrā assemblage (Daniels 1968).

Late Pastoral

Catalogue No. 15.
Close examination of the sherd suggests that the decoration was formed by repeated impressions of a short, straight edge in the wet clay, rather than by impressing, pivoting, and impressing again to produce each chevron, the technique which Nelson (2002, 13) suggests was used in the generation of the 'Woolftooth' decorative style dated to the early Neolithic in the Nabta-Kiseiba area. Cremaschi and di Lernia 1998b, fig 44, no. 1 shows a Late Pastoral sherd from the Akākūs bearing a similar horizontal band of simple diagonal impressions from a short, straight edge.

Catalogue No. 12.
Similar vessels with bands of packed zig-zag rocker on the lip of the rim are common in the Zinkekrā assemblage (Daniels 1968, nos. 79, 170, 340, 341).

Catalogue

1. TWE 021. [FP 1998]. Rim sherd of jar. Diameter at rim 180mm. Thickness of wall below rim: 5.5mm. Sandy black fabric, orange-brown outer surface, black inner surface. Inclusions: abundant rounded quartz mainly <=0.1mm, some up to 0.5mm. Packed zig-zag rocker impressions on external surface.

2. TWE 021. [FP 1998]. Wall sherd. Average thickness 5mm. Sandy black fabric. Unburnished external surface decorated with an undulating band of rocker stamping ('dotted wavy-line' rocker).

3. EDU 005. [FP 2001]. Small rim sherd – possibly wheel-made. Diameter at rim: 120mm. Average thickness of wall below rim: 5mm. Fine black, red-brown surface, heavily abraded and varnished. Inclusions: common rounded quartz mainly <=0.1mm, some 0.2-0.5mm and occasionally up to 2.0mm.

4. EDU 005. [FP 2001]. Wall sherd, possibly from a bowl. Average thickness of wall 7mm. Fabric as previous but slightly sandier.

5. EDS 015. (Transect 03.5) [FP 2000]. Rim sherd from a small bowl. Diameter at rim: 130mm. Average thickness of wall is 4.5mm. Well made, fine black fabric, burnished dark red-brown surface. The outer surface is decorated with rocker technique. The zig-zag can clearly be seen just below the rim. Below this the impressions are very closely packed. Inclusions: common rounded quartz, mainly <=0.1mm, some 0.1-0.2mm, sparse rounded limestone mainly 0.1-0.mm.

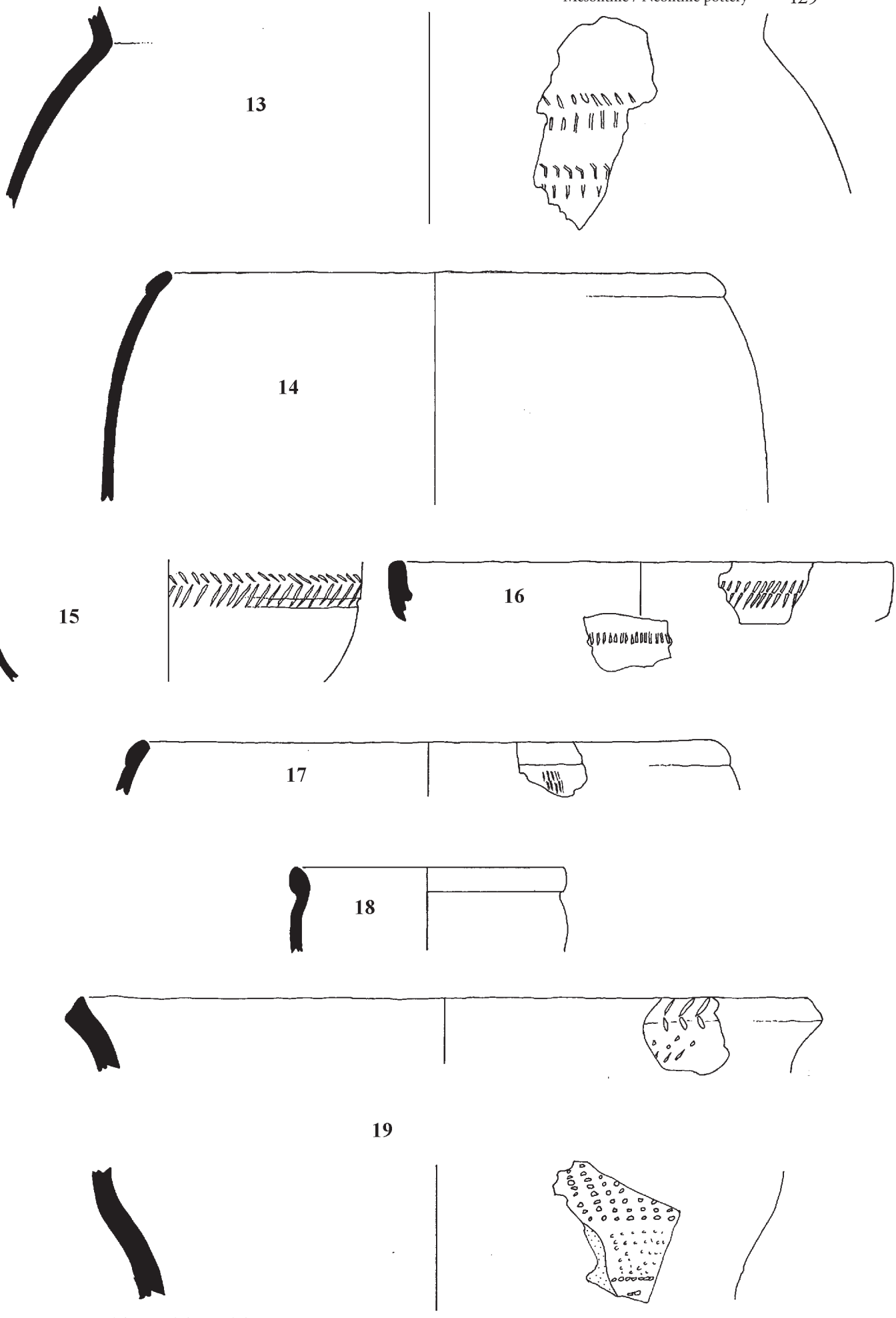


Figure 41.53 (left). Mesolithic/Neolithic pottery. Cat. Nos. 13-19. 1:2.

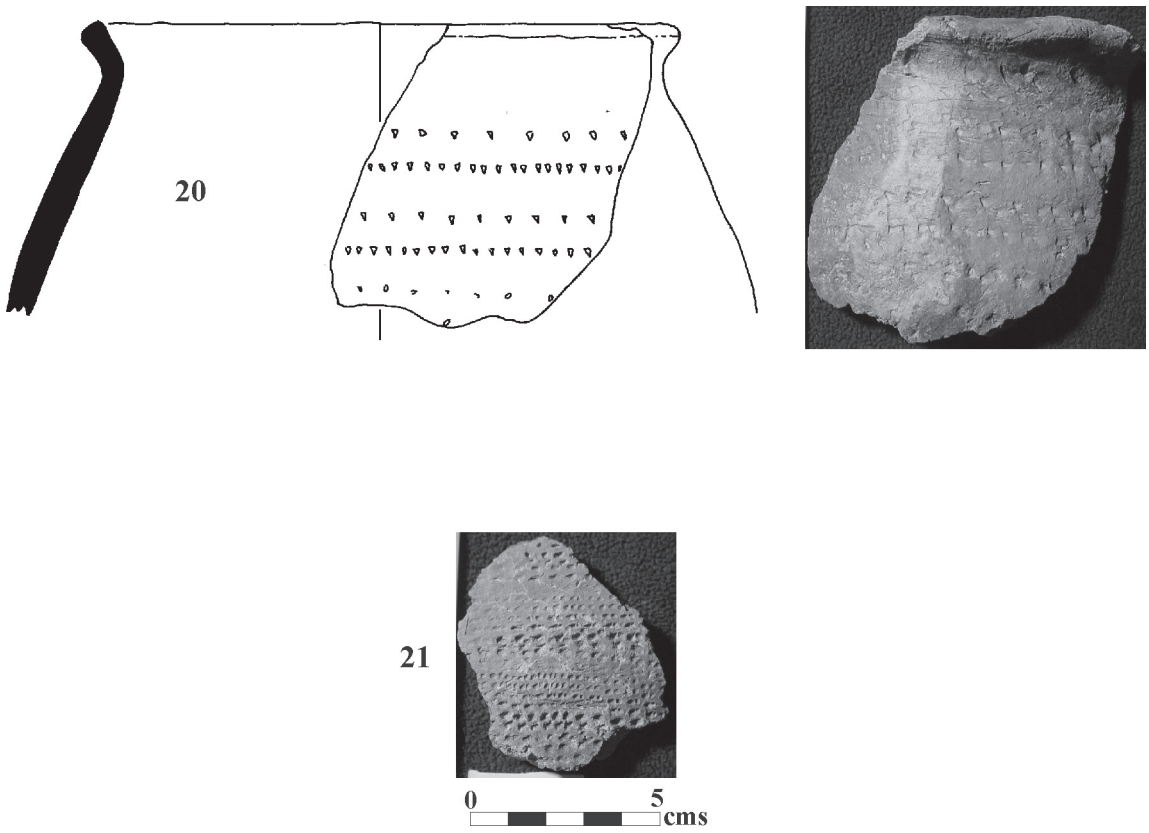


Figure 41.54. Mesolithic/Neolithic pottery. Cat. Nos. 20-21. 1:2.

6. EDU 018. [FP 2001]. Rim sherd. Diameter at rim: 240mm. Thickness of wall below rim: 7mm. Black fabric, burnished red-brown surface over a pale buff sub-surface margin. The outer surface is decorated with plain rocker zig-zags. Inclusions: sandy clay matrix, with rounded quartz, mainly 0.5-1.0mm, some 1-2.0mm; also some 'grog' and clay pellets.

7. EDU 018. [FP 2001]. Rim sherd. Diameter at rim: 140mm. Average thickness of wall: 3.5mm. Fine black fabric, burnished red-brown surface. Inclusions: discrete silty matrix with occasional quartz up to *c.*0.5mm. Impressed rocker decoration on external surface.

8. EDU 018. [FP 2001]. Rim sherd. Diameter at rim: 170mm. Average wall thickness: 2.5mm. Fabric as 7. Slight trace of rocker impression on external surface; diamond broached impression on lip.

9. EDU 018. [FP 2001]. Two rim sherds from a bowl. Diameter at rim: 220mm. Average wall thickness: 3.5mm. Sandy black, red-brown outer surface, black inner surface. Inclusions: rounded quartz up to 1.0mm, rock fragments, grog, clay pellets. The external surface carries a deeply impressed, narrow horizontal band of rocker motif.

10. EDU 022. [FP 2001]. Rim sherd. Diameter at rim: 220mm. Maximum wall thickness: 9.5mm. Sandy black, with orange-brown outer surface and black inner. Inclusions: common quartz, mostly <=0.2mm, some up to 2mm. The external surface carries part of a diagonal band of rocker decoration.

11. EDU 022. [FP 2001]. Wall sherd (possibly same vessel as previous). Average thickness 6.5mm. Sandy black with orange-brown external surface. Inclusions: common quartz, mostly <=0.2mm, some up to 2mm; also fragments of flint up to 2mm. The external surface carries a horizontal band of plain rocker impression.

12. EDU 026. [FP 2001]. Lake on edge of sand-sea. Rim sherd from a jar. The lip of the rim is very abraded. Diameter at rim: 160mm. Wall thickness: 6mm. Sandy black fabric, dull red-brown surface. Inclusions: common, quartz, <=0.1mm, sparse limestone, 0.1-0.2mm. The external surface of the rim moulding is covered with two horizontal bands of packed zig-zag rocker and there is another band clearly visible below the moulding.

13. EDU 026. [FP 2001]. Lake on edge of sand-sea. Wall sherd from a jar with flaring mouth. Average wall thickness 3mm. Well fired fine dark grey fabric with pale orange margins and red-brown surface. Inclusions: abundant well-rounded quartz mainly <=0.1mm, occasionally up to 0.5mm. The external surface has two horizontal bands of plain zig-zag rocker decoration.

14. EDU 026. [FP 2001]. Lake on edge of sand-sea. Rim sherd from a jar with an inturned rim with moulded lip. Diameter at rim: 220mm. Average thickness of wall: 3mm. Sandy pale orange fabric with dark grey core in places. Red-brown surface. Inclusions: abundant rounded quartz, mainly <=0.1mm, some up to 0.2mm and a little up to 0.5mm. Sparse rock fragments (? granite). The external surface is very abraded but there are faint traces of impressed rocker decoration.

15. EDU 026. [FP 2001]. Lake on edge of sand-sea. Wall sherd from a small bowl (?). Average wall thickness 3.5mm. Sandy dark red-brown fabric with dark grey core and red-brown surface. Inclusions: abundant rounded quartz, mainly <=0.1mm, some up to 0.2mm and a little up to 0.5mm. The external surface carries a horizontal band of nested chevrons.

16. GER 030. (grab). [FP 1999]. Rim sherd from small bowl. Diameter at rim: 200mm. Wall sherd probably from the same vessel. Average wall thickness: 4mm. Sandy black fabric, red-brown surface. Inclusions: common quartz mainly <=0.1mm, some up to 0.2mm and a little up to 0.5mm. The external surfaces of both pieces appear to be decorated with simple impression, the rim with a band of diagonals, the wall with an evenly serrated edge.

17. GER 033. (A2). [FP 1999]. Rim sherd. Diameter at rim: 230mm. Thickness of wall: 5mm. Gritty black with burnished red-brown surface. Inclusions: common rounded quartz mostly <=0.1mm, a little up to 1.0mm. See Mattingly *et al.* 2003, 129, fig. 4.23.

18. GER 033. (A2). [FP 1999]. Rim sherd. Diameter at rim: 110mm. Thickness of wall: 4.5mm. The exterior wall below the rim is decorated with packed rocker motif. Sandy black with brown-buff surface; inclusions: common rounded quartz mostly <=0.1mm, a little up to 1.0mm. See Mattingly *et al.* 2003, 129, fig. 4.23.

19. GRA 002. [FP 2001]. Rim sherd and wall sherds probably representing at least two vessels. Diameter at rim: 290mm. Average wall thickness: 7.5mm. Sandy black with brownish-buff surface; inclusions: common sub-angular quartz mostly <=0.2mm. External surfaces carry zig-zag rocker decoration.

20. GRA 002. [FP 2001]. Rim sherd and five wall sherds probably all from the same vessel. Diameter at rim: 160mm. Average wall thickness: 9.5mm. Sandy black with dark brown surface. Inclusions: common rounded quartz mostly <=0.mm, occasionally up to 1.0mm. External surfaces decorated with alternately pivoting stamp impressions (non-return).

21. GRA 002. [FP 2001]. Wall sherd. Wall thickness 8.0mm. Sandy black with red-brown surface. Inclusions: common quartz, mostly <=0.1mm, some up to 2.0mm. External surface decorated with packed rocker stamp.

SECTION 42. THE LITHICS

By T. Reynolds

Introduction

The background to the field collections of lithics was described in *AF 1* and several case studies were examined in detail (*AF 1*, 107-17, 127-35). The wider context of these lithic assemblages was also discussed (*AF 1*, 327-35; see also Reynolds 2006). This Section provides details and illustrations of a sample of the lithic tools recovered by the survey from 1997-2001. While there has been considerable work on prehistoric lithics from SW Fazzān, little material from the area covered by the Fazzān Project has been published hitherto (al-Azzabi 2006; Close 1987; Cremaschi and di Lernia 1998a; di Lernia and Cremaschi 1997; di Lernia and Manzi 1998; 2002; di Lernia *et al.* 1997; Garcea and Sebastiani 1998a; Klitsch and Pesce 1966; Ziegert 1966; 1967; 1995; 2000).

Pleistocene Lithics

In the absence of evidence for an early chopper-chopping tool-based industry for the area, there is evidence for four main technological or chronological phases within the Pleistocene. This division places any Epipalaeolithic materials into the Holocene, as it is believed unlikely that significant reoccupation of the landscape took place prior to 10,000 BP despite the decreasing aridity taking place from *c.*14,000 BP. The Pleistocene phases identified are: 1. The Acheulean, 2. The Mousterian, 3. The Aterian, 4. A Blade Industry.

1. The Acheulean

Considerable investigation has examined the Acheulean techno-complex in NW Africa (Alimen 1979; Biberson 1961). It has been suggested that an *in situ* evolution of the Acheulean industries can be documented from out of earlier chopper-chopping tool industries and a sequence of Acheulean phases can be identified. Generally, the decreasing frequency of cobble tool forms, improved 'design' of bifaces (increasing refinement of form, straight or s-shaped edges rather than sinuous ones) and an increasing inventory of associated flake tools are all used as indicators of position within the sequence. Equally, the appearance, development and diversification of Levallois technique are also important elements. The succession of increasingly refined biface assemblages can be associated with a series of coastal features which allows them to be placed into a geomorphologically-based chronology and so some, at least, of the assumptions of the importance of 'refinement' in bifacial techniques are supported. It is more problematic, however, to use such a scheme in the Fazzān because sample sizes are low, exploitation of raw materials (and indeed the raw materials themselves) may be different and hominid ecology will be significantly different. It may be the case that the circum-Mediterranean zone was, once occupied, continuously exploited. In such circumstances techno-typological succession may be documented. In the Fazzān, occupation is likely to be periodic with intervals when human populations were entirely absent. For a single chronological scheme to work, consistent reference to both materials and environmental background are vital; neither is available in the Fazzān at present. The utility of the NW African scheme is, therefore, questionable. In describing the Acheulean in the Fazzān, technological reference has been to Bordes (1961) and whilst it is recognised that refinement of bifaces may be a chronological indicator, it is clear that biface form alone should not be used to establish chronology. Cruder bifaces can occur after well-made examples exist and sample size, other lithic associations, and geomorphology ought all to be taken into account. It is with these caveats that the following assessment of the Acheulean in the Fazzān is presented (Fig. 42.1).

A total of 52 bifaces was collected (including two cleavers within this category) and many more noted during fieldwork. The collection is listed in Table 42.1.

The other Acheulean type fossil, the backed knife, is absent from the Fazzān collections. This absence may be real but could equally result from sample bias, when bifaces occur, there is a tendency for less experienced workers to collect them in preference to flake tools. In this account, therefore, the Acheulean will be described on the basis of biface form and distribution. The associations of flake tools, cores, etc, may not represent behavioural associations, but rather the palimpsest of activities over the landscape through time.

There are two 'abbevillian' bifaces, both are from the Wādī area itself. These pieces are irregular, have sinuous edges and relatively few flake scars. Both also retain cortex and were made on quartzite cobbles. Both pieces were also weathered. As noted above these artefacts could be the earliest evidence from the Wādī al-Ajāl but better made, more refined forms may be older. In terms of age bifaces in NW Africa could date as far back as 1myrs or be as 'young' as 70,000 BP. The condition of the abbevillian types cannot be used as an indicator of age because the degree of weathering will depend upon raw material durability, exposure and microtopography of deposition. It has been observed that the most consistently heavily weathered pieces are Aterian.

The most frequent forms of biface are micoquian and amygdaloid. In southern Europe, Micoquian forms are frequently 'Rissian' in age (OIS 6) but similar forms in NW Africa are Middle Acheulean and can be as old as 400,000 BP (Clark 1992). Equally, in the Middle Acheulean flat ovates, lanceolate bifaces, cleavers and use of Levallois technique all occur. All of these elements are also found in the Fazzān. However, it must be continually

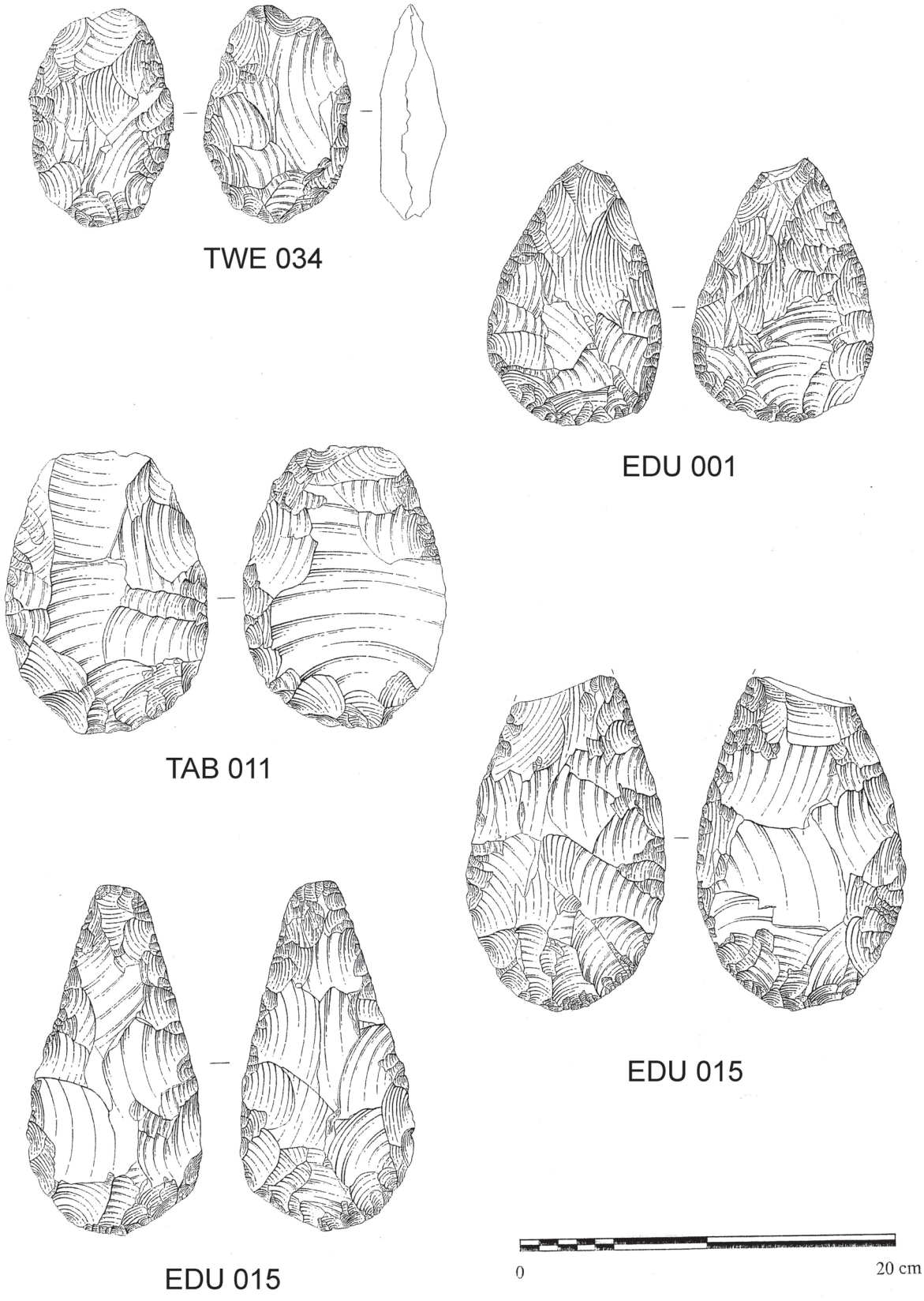


Figure 42.1. Acheulean quartzite bifaces from EDU 001, EDU 015 and TWE 034, three with broken tips, and a cleaver (TAB 011).

Table 42.1. Fazzān bifaces

ID	Site (Context)	Raw Material	Artefact	Form	Completeness
0171	EDU 001	quartzite	biface	cordiform	broken
0172	TWE 035	quartzite	cleaver	whole	
0624	TWE 034	quartzite	biface	limande	whole
1774	GSC area (Hamada)	quartzite	biface	ficron	whole
1785	GSC area (Hamada)	sandstone	biface	micoquian	whole
1808	LGR 011	quartzite	biface	unknown	broken
1813	LGR 012	quartzite	biface	amygdaloid	whole
1824	EDU 015	quartzite	biface	unknown	broken
1825	EDU 015	quartzite	biface	micoquian	whole
1826	EDU 015	quartzite	biface	cordiform	broken
1827	EDU 015	quartzite	biface	unknown	broken
1828	EDU 015	quartzite	biface	micoquian	whole
1829	EDU 015	quartzite	biface	micoquian	whole
1830	EDU 015	quartzite	biface	micoquian	whole
1831	EDU 015	quartzite	biface	cordiform	whole
1832	EDU 015	quartzite	biface	lanceolate	whole
1833	EDU 015	quartzite	biface	lanceolate	whole
1834	EDU 015	quartzite	biface	ovate	broken
1835	EDU 015	quartzite	biface	micoquian	whole
1856	ELH 036	quartzite	biface	micoquian	broken
1906	FJJ 051	quartzite	biface	amygdaloid	whole
1909	FJJ 051	quartzite	biface	amygdaloid	whole
1949	TMT 002	quartzite	biface	cordate	broken
1950	TMT 002	quartzite	biface	abbevillian	whole
1963	ZOU 026	quartzite	biface	abbevillian	whole
1986	TAB 011	quartzite	biface	lanceolate	whole
1987	TAB 011	quartzite	cleaver		whole
2032	EDU 003	quartzite	biface	unknown	broken
2033	EDU 003	quartzite	biface	amygdaloid	whole
2034	EDU 003	chert	biface	micoquian	whole
2035	EDU 003	quartzite	biface	micoquian	whole
2036	EDU 003	quartzite	biface	micoquian	whole
2041	TAG 032	quartzite	biface	unknown	broken
0177	TWE 034	quartzite	biface	amygdaloid	whole
0186	GSC 052	quartzite	biface	unknown	broken
0256	ELH 013 (F21)	quartzite	biface	amygdaloid	whole
0475	GER 016 (818)	silcrete	biface	unknown	broken
0570	GER 016 (804)	quartzite	biface	unknown	broken

ID	Site (Context)	Raw Material	Artefact	Form	Completeness
2274	GSC area (Hamada)	quartzite	biface	amygdaloid	whole
2279	GER 037 (3)	quartzite	biface	amygdaloid	whole
0362	ELH area	quartzite	biface	micoquian	whole
0393	ELH 008 (634)	quartzite	biface	unknown	broken
0411	ELH 008 (629)	quartzite	biface	unknown	broken
5225	EDU 018	quartzite	biface	cordiform	whole
5225	EDU 018	quartzite	biface	amygdaloid	whole
5234	TAB 030	quartzite	biface	cordiform	whole
5263	TAB 030	quartzite	biface	-	broken
5268	TAB 030	quartzite	biface	pointed	whole
5284	EDU 023	quartzite	biface	pointed	whole
5329	EDU 023	quartzite	biface	-	broken
3395	EDU 022	quartzite	biface	ficron	whole
5366	EDU 022	quartzite	biface	ficron	whole
5437	EDU 005	quartzite	biface	ovate	whole
5438	EDU 005	quartzite	biface	amygdaloid	whole

stressed that no assemblages of Pleistocene date have been examined, this synthesis is based upon 'grab' samples of specific tools. The largest single Acheulean collection is of twelve bifaces from EDU 015 (Figs 39.3-39.4). Cordiform and amygdaloid bifaces may be later forms than the micoquian noted above. The two cleavers collected are clearly made on flakes (one on a Levallois flake) and only one biface (from EDU 015) was clearly made on a flake. Most pieces seem to have been made on quartzite cobbles whilst some bifaces were made on tabular quartzite blocks. Only two bifaces were not made on quartzite, one from EDU 003 was on chert and one from GER 016 was on silcrete. The chert piece was micoquian in form while the silcrete example was broken and shape could not be accurately described. There are no examples of triangular or 'bout coupe' forms which are generally associated with Mousterian industries. This may mean that the Acheulean is distinct from the Mousterian in the Fazzān (i.e. there is no Mousterian of Acheulean tradition), or that an Acheulean phase was contemporary with the Mousterian which did not, therefore, become modified to reflect it. That is to say that the Mousterian was a separate lithic response/adaptation from that of the Acheulean.

Non-biface evidence for Acheulean presence is limited to three quartzite biface trimming flakes from EDU 001 and ELH 005 and LGR 004. Again, sample sizes limit interpretation, these could be manufacturing sites, or simply be places where tools were reshaped or trimmed. Interestingly, none is close to quartzite outcrops and so the latter interpretation might be the more likely.

In terms of associated technology, Levallois cores have been found in close proximity to bifaces on the Hamada (Hamada will be used here as shorthand for the Massak Ṣaṭṭafat), whilst two have been found without bifaces at GER 037 and the only other Levallois core comes from the mausoleum in the Wādī. The latter examples may be Mousterian or Aterian rather than Acheulean. Disc cores, that may be part of a broader Levallois 'chaine operatoire', share this distribution and are also found on the escarpment talus at Tuwash. Disc cores are actually more frequent than Levallois examples and tend to be smaller than them. Blank forms found at biface sites include both flakes and blades and the frequency of the latter is, in places, significant.

In summary, the Acheulean is represented by a series of bifaces, the largest collection being 12 pieces from EDU 015. Typologically and technologically, most pieces could be considered either Middle or Late Acheulean which would give a date range beginning *c.*400,000 BP. There are no clear campsites or knapping areas, although the two clusters of bifaces observed at EDU 015 are interesting. The two clusters comprise only bifaces and while one is nucleated, the other is linear. These patterns may simply be a product of post-depositional sorting but some behavioural data may also be present. Further work on this site would be useful. Technology which can be associated with the Acheulean shows use of Levallois flake technique (one of the cleavers was made on one), background material where bifaces have been recovered includes disc cores, flakes and blades.

2. The Mousterian.
The limitations and problems of sampling noted above for the Acheulean also apply for the succeeding phases. The Mousterian is recognised as a flake-based industry dominated by sidescrapers, points and denticulates (Bordes 1961). Core tools are rare but bifaces can occur. Associated technology includes both Levallois technique and disc core use. Blank forms can include both blades and flakes. Given these characteristics, it is difficult to discriminate Mousterian sites from those of the Acheulean noted above. The presence or absence of bifaces or biface trimmers is the only factor used in the present study. It should also be noted that the Aterian is essentially a Mousterian characterised by tanged tools and bifacial foliates. Once again sampling difficulties may be apparent. In this study, the Mousterian is a label applied to all Palaeolithic materials that are lacking the type fossils of either the Acheulean or the Aterian. No Upper Palaeolithic is known from the area and this may be expected as a response to the increasingly arid conditions

Table 42.2. Mousterian Artefacts.

Site (Context)	Blank	Tool type	Date
EDU 001	flake	scraper	Mousterian?
GER 016 (915)	flake	sidescraper	Mousterian
GER 030	flake	mousterian point	Mousterian
GER 033 (C4)	flake	sidescraper	Mousterian
GER 033	blade	denticulate	Mousterian?
GER 032	flake	sidescraper	Mousterian?
GER 032	flake	denticulate	Mousterian?
GER 035 (A1)	flake	sidescraper	Mousterian?
SCH 029	flake	sidescraper	Mousterian?
GSC area (Hamada)	flake	scraper	Mousterian
GSC area (Hamada)	flake	levallois flake	Mousterian?
TAG 033	flake	mousterian point	Mousterian
LGR 011	blade	elongate levallois point	Mousterian
ELH 033	flake	sidescraper	Mousterian?
TAB 032	flake	mousterian point	Mousterian
TAB 032	flake	tayac point	Mousterian
TAB 032	flake	mousterian point	Mousterian
TAB 032	flake	denticulate	Mousterian
ITF 011	flake	sidescraper	Mousterian?
CLF 008	flake	levallois flake	Mousterian
GDB 001 (NW quad)	flake	limace	Mousterian
GER 001 (G1)	flake	scraper	Mousterian?
ELH 005 (558)	flake	pseudo-levallois point	Mousterian?
ELH 013 (F21)	flake	levallois flake	Mousterian?
GSC 052 (W transect)	flake	sidescraper	Mousterian
CHA 001	flake	sidescraper	Mousterian?
GSC area (Hamada)	flake	denticulate	Mousterian?
TWE area	flake	sidescraper	Mousterian
TWE area	flake	sidescraper	Mousterian
GER 016 (820)	flake	levallois flake	Mousterian?

Site (Context)	Blank	Tool type	Date
GER 037 (t2)	flake	levallois flake	Mousterian?
GER 037 (t2)	flake	sidescraper	Mousterian
GER 037 (t1)	flake	levallois flake	Mousterian?
LGR 011	flake	limace	Mousterian
GER 034 (b1)	flake	sidescraper	Mousterian
GER 034 (z6)	flake	limace	Mousterian?

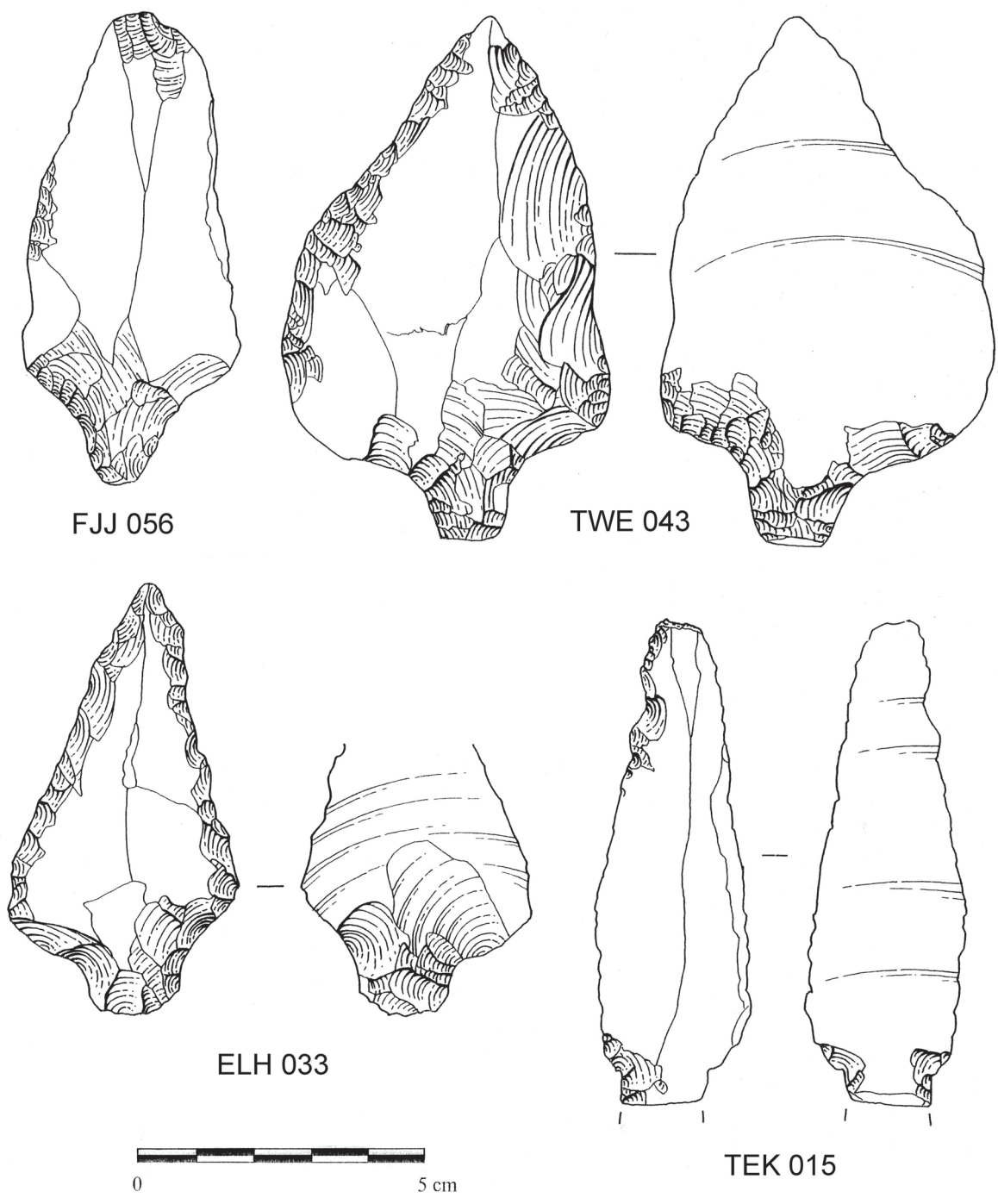


Figure 42.2. Aterian artefacts, comprising tanged points (FJJ 056, TWE 043, ELH 033) and a tanged blade (TEK 015).

Table 42.3. Aterian artefacts.

Site (Context)	Blank	Raw Material	Tool Type
MAR 010	flake	flint	bifacial foliate
FJJ 056	flake/blade	quartzite	tanged blade
EDS 015	blade	quartzite	tanged blade
ELH 033	flake	quartzite	tanged point
ELH 033	flake/frag	quartzite	bifacial foliate
TEK 015	blade	quartzite	tanged blade
FJJ 051	flake	fossil wood	tanged flake
ELH area	flake	quartzite	tanged flake
TWE 043	flake	quartzite	Aterian point
GSC area (Hamada)	flake	quartzite	tanged flake

which began from 70,000 BP. Although there was a brief damper phase *c.*40,000 BP it appears to have been too short to allow repopulation on a scale adequate to be reflected in the archaeological record (Vermeersch 1992; Wendorf and Schild 1980).

The Mousterian has traditionally been placed in the Upper Pleistocene with a date range of 105,000 – 40,000 BP. Application of various absolute dating techniques now requires a revision of this span. Well-made flake industries can now be identified during OIS 7 (245,000 – 186,000 BP), 6 (186,000 – 130,000 BP) and 5 (130,000 – 70,000 BP) in both Europe and the Levant and possibly as early as OIS 12 (478,000 – 423,000 BP). It is likely that the Fazzān flake tools also span part of this range. Table 42.2 presents the list of Mousterian pieces.

The Mousterian recovered by the Project shows a typical range of flake-based tools which is dominated by sidescrapers. Double sidescrapers are the most common form and retouching is often heavy and invasive. Denticulates and Mousterian points make up the next most frequent types. There are three limaces and a single Tayac point. There are no Upper Palaeolithic forms and Quina retouch is missing. There are a small number of Levallois elements. The collection, if it were to be regarded as an assemblage, would be considered a Levallois Mousterian of fairly typical form. There is little evidence of a 'Charentian' aspect and whilst denticulates are present, this is not in sufficient numbers to be ascribed to a Denticulate Mousterian variant. The frequency of double sidescrapers may indicate some pressure on raw material away from the Hamada (Dibble 1987). A pseudo-Levallois point confirms the use of disc core technique, as is also witnessed by the collection of disc cores from different parts of the survey area. All the collected pieces were made on Hamada surface quartzite.

3. The Aterian (Figure 42.2).

The Aterian has been described as the most common Middle Palaeolithic industry in the Sahara, with the Mousterian being rare (Clark 1993; Wendorf and Schild 1992). In the case of the survey area the reverse is the case. Aterian type pieces are rare and Mousterian finds are more common. There are only ten Aterian pieces in the collection (Table 42.3) and in contrast to other Pleistocene industries it is rare on the Hamada with only a single example collected (a tanged flake). This is surprising given the outcropping quartzite which was an attractive resource to both Acheulean and Mousterian knappers in the survey area and elsewhere (di Lernia and Cremaschi 1997). This pattern does, however, repeat that noted by Cremaschi and di Lernia (1996b) in the Wādī Tillīzāghan (for broader discussions of the Aterian in the Sahara, see Debénath 1994; di Lernia 1998; 1999).

It can be seen from Table 42.3 that despite being more limited in distribution, the Aterian has greater raw material variety. It remains to be seen whether the lack of finds from the Hamada is a cause or an effect of raw material use patterns. It should also be noted that as a collection the Aterian pieces are more frequently aeolised and the degree of weathering is greater than other periods. This might imply that the Aterian was deposited under significantly different erosional conditions than those for the Acheulean and Mousterian.

4. Big Blade Industry (Figure 42.3).

Survey of the Hamada area revealed a small concentration of extremely large blades made on the quartzite which outcrops there (GSC 055). These blades were made on large blocks of quartzite, have parallel dorsal arretes and edges and large plain platforms. Their size can exceed 30cm length. It was first believed that the blades were a chance occurrence resulting from exploitation of the blocky quartzite, however, further finds of such blades, including two in silcrete, suggest that this phenomenon

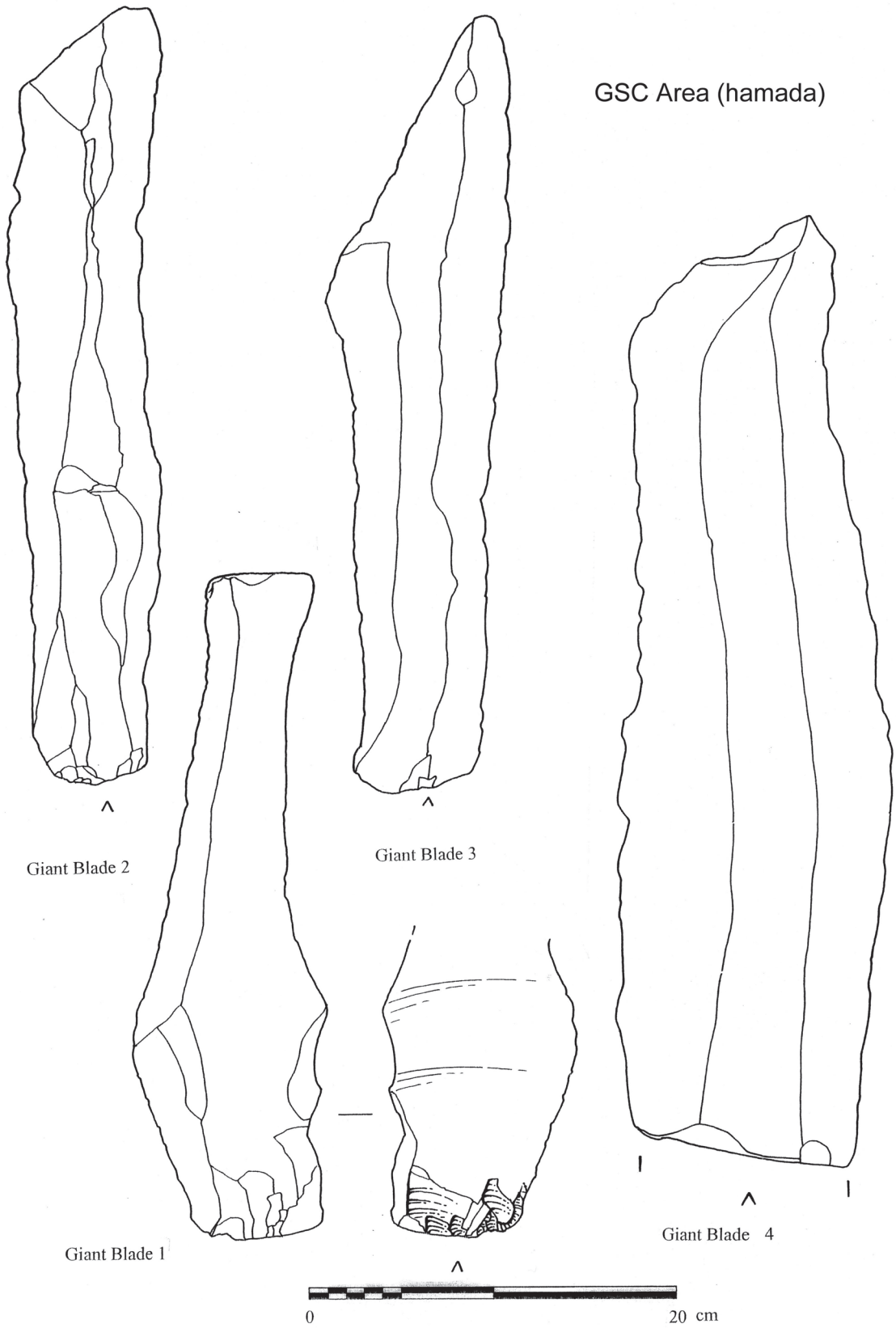


Figure 42.3. Quartzite giant blades, all with large plain platforms. One has ventral thinning at the bulbar end.

Table 42.4 Holocene tool inventory.

Site (Context)	Blank Type	Raw Material	Tool type
GER 016 (905)	blade	quartzite	endscraper (double)
GER 016 (910)	flake	quartzite	endscraper
GER 016 (907)	flake	quartzite	scraper
GER 016 (902)	flake	quartzite	endscraper
GER 016 (902)	flake	quartzite	endscraper
GER 018 (972)	flake/blade	quartzite	endscraper
GER 026	blade	quartzite	endscraper
GER 026	blade	quartzite	endscraper
GER 033 (A2)	flake	flint	projectile point (tanged)
GER 033 (A5)	flake	flint	perforator
GER 033 (B5)	blade	flint	perforator
SCH 029	fragment	chert	predynastic knife
GER 030	fragment	chert	predynastic knife
SCH 029	flake	flint	endscraper
SCH 029	flake	flint	scraper
TAG 033	flake	quartzite	scraper(round)
TAG 033	flake	quartzite	scraper(round)
TAG 033	flake	quartzite	scraper(round)
ELH 035	flake	quartzite	scraper
FJJ 044	bladelet	flint	projectile point (tanged)
CLF 009	flake	quartzite	scraper(round)
GSC area (Hamada)	fragment	quartzite	axe (flaked)
TAG 030	flake	quartzite	scraper(hollow)
TAG 030	flake	flint	projectile point
GBD 001 (NW quad)	flake	quartzite	scraper (round)
GBD 001 (SE quad)	flake	quartzite	axe flaked
ZIN 905	fragment	silcrete	axe flaked(bifacial)
ZIN 905	fragment	silcrete	axe – flaked
GER 002	flake	quartzite	projectile point bifacial (barbed and tanged)
ELH 002	flake	quartzite	projectile point (barbed and tanged)
GER 016 (802)	flake	quartzite	scraper
GER 016 (817)	flake	quartzite	scraper (round)
GER 016 (809)	blade	quartzite	endscraper
GER 016 (813)	flake/blade	quartzite	endscraper
GER 016 (803)	flake	quartzite	endscraper
GER 016 (803)	flake	quartzite	endscraper
GER 016 (811)	blade	quartzite	endscraper
GER 016 (819)	flake	quartzite	scraper (round)

Site (Context)	Blank Type	Raw Material	Tool type
GER 016 (816)	flake	quartzite	endscraper
GER 016 (801)	flake	quartzite	scraper
GER 016 (803)	flake	quartzite	scraper
GER 036 (grab)	flake	flint	perforator
TIN 035	flake	quartzite	axe (flaked)
GER 034 (a5)	flake	quartzite	projectile point (bifacial)
GER 034 (c1)	flake	flint	projectile point (barbed)
GER 034 (c1)	flake	flint	projectile point (bifacial)
GER 034 (x4)	flake	flint	foliate(willow)
GER 030	flake	quartzite	projectile point
GER 030	flake	flint	projectile point (tanged)
GER 034 (grab)	flake	quartzite	retouched point
GER 034 (grab)	bladelet	flint	bilaterally retouched bladelet
GER 034 (grab)	flake	flint	projectile point (bifacial)
GER 034 (grab)	blade	flint	backed blade
BBG 007	flake	quartzite	scraper
BBG 007	flake	quartzite	scraper
SCH 024	flake	flint	foliate (bifacial)
TAG 043	flake	quartzite	scraper
GER 034 (z4)	flake	quartzite	scraper
EDU 001	flake	quartzite	scraper
EDU 002	flake	quartzite	perforator
EDU 002	fragment	flint	scraper
EDU 002	flake	quartzite	projectile point (bifacial)
GER 016 (811)	flake	quartzite	scraper
GER 016 (804)	flake	quartzite	scraper
GER 016 (816)	flake	quartzite	scraper
GER 016 (817)	flake/blade	quartzite	
GER 016 (809)	flake	quartzite	scraper
GER 035 (B2)	fragment	quartzite	polished axe
BBG 013	fragment	silcrete	waisted axe
GSC area (Hamada)	fragment	quartzite	bifacial pick
GER 033 (B2)	blade	chert	segment
GER 033 (A5)	blade	flint	segment (microlithic)
GER 033 (A5)	blade	flint	segment (microlithic)
GER 033 (C5)	flake	flint	microlith
GER 033 (B1)	flake	flint	microlith
GER 033 (B1)	bladelet	quartzite	microlith
GER 033 (C1)	bladelet	flint	microlith (bilaterally retouched)

Site (Context)	Blank Type	Raw Material	Tool type
GER 034 (B3)	bladelet	chert	microlithic point
GER 035 (B2)	blade	flint	backed blade
GER 035 (b2)	bladelet	flint	backed bladelet
GER 030	bladelet	quartzite	backed bladelet
GER 034 (grab)	blade	flint	backed blade
EDU 002	bladelet	quartzite	backed bladelet
EDU 002	bladelet	quartzite	backed bladelet
EDU 002	bladelet	quartzite	backed bladelet
EDU 002	bladelet	quartzite	backed bladelet
GER 034 (x4)	bladelet	carnelian	backed bladelet
EDU 001	flake	quartzite	perforator
FUG 025	fragment	quartzite	polished axe
GER 030 (grab)	fragment	flint	polished axe
ELH 032	flake/frag	chert	polished axe
TWE 016 (F13)	flake	silcrete	projectile point (bifacial)
GER 016 (803)	fragment	quartzite	polished axe
GER 034 (z4)	flake	flint	flake off polished axe
GER 032 (a3)	flake	quartzite	endscraper

is a true blade industry. Other regular and large blades (up to 20cm length) can be found scattered over the Hamada surface. Fragments of large blades can also be found in the palaeolakeside scatters of Jarma, although interestingly no complete examples were collected. There is no clear evidence for the date of this industry. It could be a form of the 'megablade' industry referred to by Smith (1993) although given the lack of other evidence for Late Pleistocene/early Holocene exploitation of the Hamada it is believed that it may be Middle Palaeolithic in age. If this is so, it would put the industry in association with other blade rich assemblages such as the pre-Aurignacian of the Haua Fteah (although recent examination of these industries suggests that the blade element may have been over-emphasised), the Amudian of the Levant and the MSA of southern Africa (Bar-Yosef 1998; Close 1986; McBurney 1967, McBurney and Hey 1955). The purpose of these blades is unknown, retouched formal types have not been recognised and only two cores have been seen. This industry would repay more focussed examination.

Pleistocene Technology

The Middle Palaeolithic industries recovered use both prepared core techniques such as Levallois and disc cores but also irregular flaking. There does not seem to be a selection of specific raw materials for given technologies or tools but samples are small. Direct hard hammer percussion dominates the reduction process but some use of soft hammer is likely in the manufacture of some of the bifaces. Regular, deliberate blade production was present but there is not a specialised blade tool inventory, blades appear to be used in the same way as flakes.

Retouch forms are simple, Quina retouch is absent but both invasive and nibbling retouch can occur. Inverse retouch was used on a few scrapers but normal retouching is more common. Bifacial retouching occurs on bifaces and the Aterian bifacial foliates. The latter often show step terminations and are unevenly worked. One Aterian foliate may have been abandoned in manufacture (MAR 010, palaeolake W of Qaṣr Māra).

Holocene Lithics.

There are a number of different terminologies for the industries of the Holocene in the Sahara (di Lernia and Garcea 1997) and it was noted above that any 'Epipalaeolithic' industries here would be grouped with Holocene traditions. Some of the definitions are based upon lifeways (Barich 1984; 1992; Close 1990; 1992; di Lernia and Cremaschi 1996a) for which there is little evidence within the survey data. Definitions used here, therefore, reflect the need to classify and group stone tools and technology (but see di Lernia and Manzi 1998). A significant amount of Holocene lithic material has been recovered from the survey area but different sampling methods have also been applied and so this needs to be taken into account when assessing Holocene human activities.

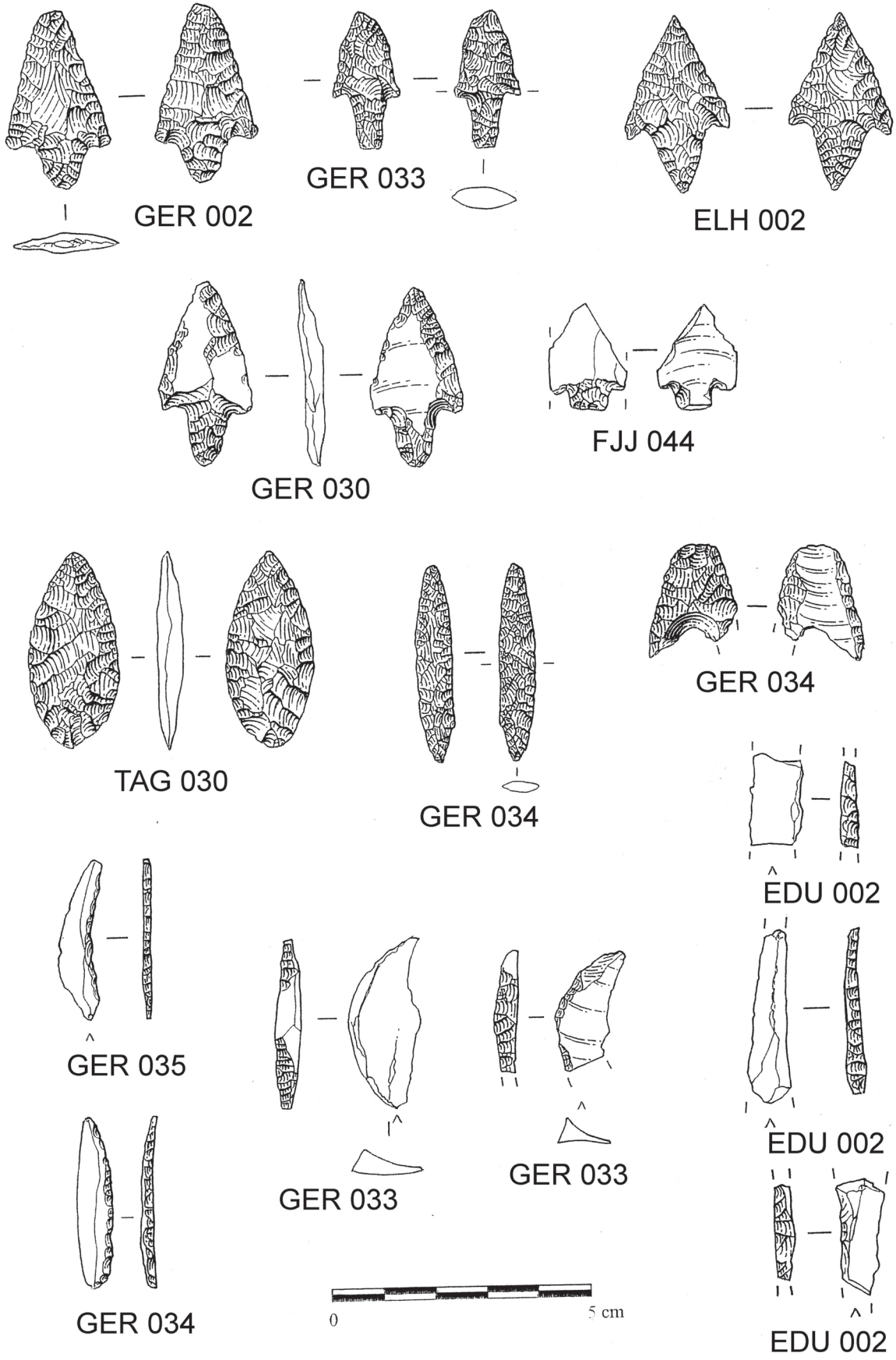


Figure 42.4. Holocene projectile points and backed pieces. From top, left to right: GER 002 Quartzite tanged bifacial point; GER 033 bifacial tanged point; ELH 002 quartzite bifacial tanged point; GER 030 partially bifacial tanged point; FJJ 044 broken tanged point; TAG 030 bifacial foliate point; GER 034 lanceolate bifacial foliate point; GER 034 flint bifacial hollow-based point; GER 034 and 035 backed bladelets; GER 033 two backed crescents; EDU 002 three backed bladelets.

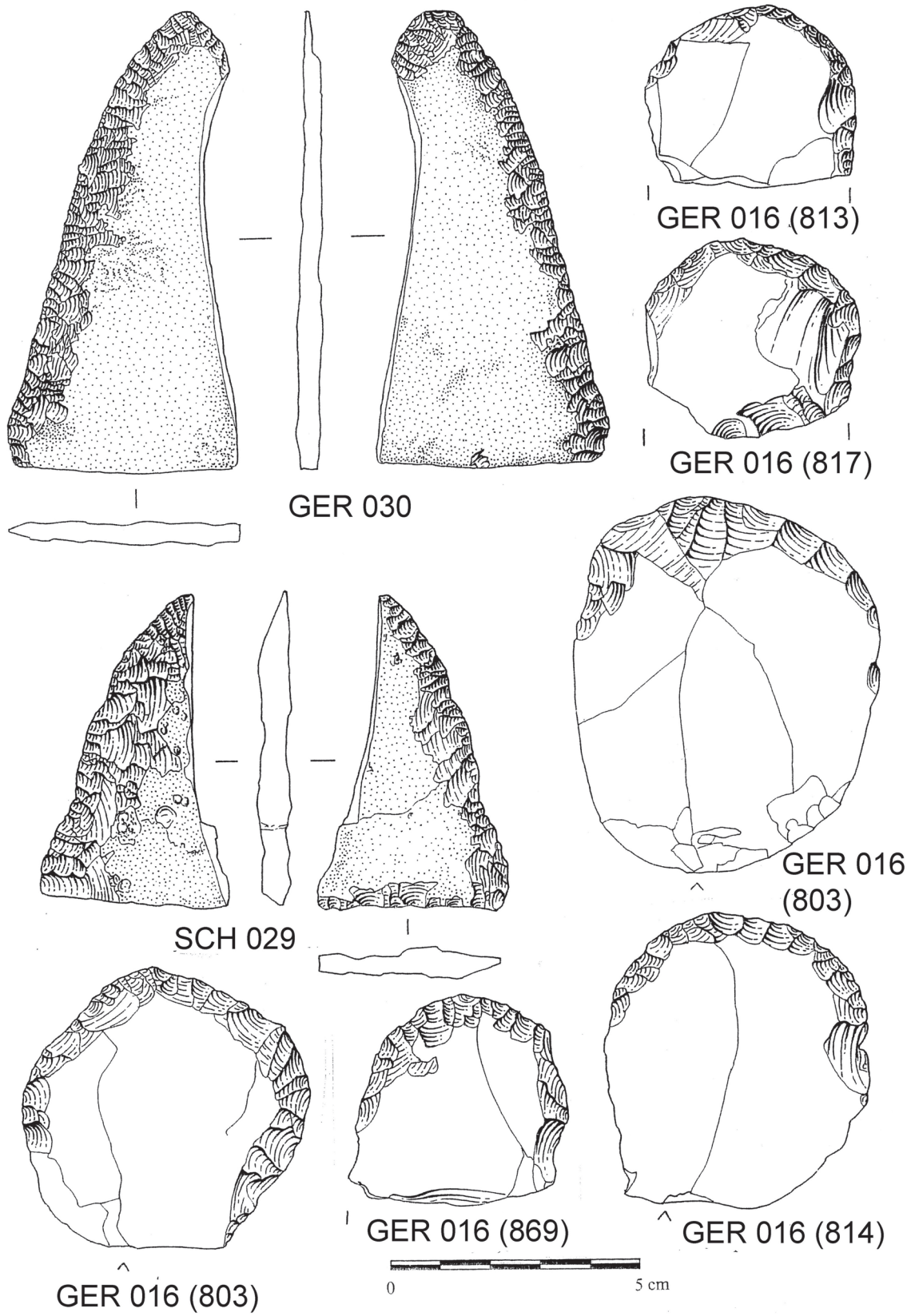


Figure 42.5. Holocene artefacts. GER 030 and SCH 029 fragments of Predynastic knives; GER 016 various forms of round- and end-scrapers.

In the following account the typology of Tixier (1963) has been employed and for projectile points Hugot (1957) has been used. However, there is a lack of effective synthesis of the time/space relationships of Saharan projectile points. In the hope that such a work will one day be forthcoming, a selection of the finished and unbroken points recovered by the survey are illustrated (Figure 42.4; *cf.* also Fig. 39.5). There remains a problem, however, over terminology (di Lernia and Garcea 1997). It is possible to have an Epipalaeolithic, a Mesolithic with ceramics, a Neolithic without ceramics and pastoralists with and without! It is believed that within the survey area most Holocene materials will be the product of groups that were pastoralists. As a result of this belief, I will avoid the term Neolithic which has connotations of farming and follow the Italo-Libyan project's use of the term Pastoral (with early, middle and late subdivisions). It is not possible to assign material to the earlier period with any degree of accuracy and so I will refrain from using their scheme of 'Akākūs' phases and regard all pre-Pastoral materials as one. The Holocene phases are thus 5. The Pre-Pastoral, 6. The Early Pastoral, 7. The Mid Pastoral, 8. The Late Pastoral.

5. The Pre-Pastoral Phase.

This phase includes Epipalaeolithic and Mesolithic groups and has both aceramic groups and groups using pottery. It begins in the area in the 10th millennium with the earliest date at present being 9,765± 105 BP (GX-20750) from Wān Afūda (di Lernia and Cremaschi 1996b). The industry associated with this phase (Fig. 42.4) is typified by backed tools on blades and bladelets and this includes some lunates, borers and truncations (Cremaschi and di Lernia 1995). Raw material variability is limited and local sources are exclusively exploited. Retouching 'sur enclume' (Tixier 1963) is frequently used for backing. Although the industry defined here would not characterise any of the intensively collected sites, there are a number of pieces that could fit within it (e.g. those from EDU 002, GER 034 and GER 030). Some of the backed bladelets are retouched 'sur enclume' and most are on local raw materials. Once again, however, the problems of sampling must be emphasised and although an individual element may match a 'Pre-Pastoral' description, definition of industries is an assemblage-based exercise and matching pieces can occur within a broad range of dates outside that defined for an assemblage with the requisite characteristics.

It should be noted that a number of broad blade and flake based endscrapers have been illustrated as Epipalaeolithic in the Libyan Valleys' work (Barker 1996, 95) and pieces of similar form come from GER 018, TAG 033, GER 016 (Fig. 42.5) (transects 801, 803, 809, 811, 813, 816, 817, 819). These pieces were termed 'Capsian' but this would not be appropriate in the Fazzān. It should also be noted that such pieces have not been illustrated amongst the described Epipalaeolithic pieces from the Tadrart Akākūs. All that may be suggested here is that these pieces are Early-Middle Holocene in age.

6-7. The Early-Mid Pastoral Phases

In terms of establishing a chronology from the recovered pieces, projectile points from the following sites would best fit within an Early-Middle Pastoral phase (7,400-5,000 BP): ELH 002, GER 002, GER 030 (2 pieces), GER 033, GER 034 (4 pieces), TAG 030, FJJ 044, EDU 002, and TWE 016 (Fig.42.4). The closest parallel to any of the projectile points recovered is the piece from GER 034 (X4) which is a close match to one from Wān Muhūjjāj, level 2b, sector B which has an associated 14C date of 5,350 ±200BP (UB 226) (Pazdur 1993). In general Barich notes (1987b) that bifacial projectile points are most common between 7,000-5,300 BP at Ti-n-Torha East, whilst Close (1987) observes that in the Central Sahara they are associated with the late Neolithic with dates from 7,000-5,000 BP. The two segments, both from GER 033 could be Epipalaeolithic/early Neolithic but they also occur in the Middle Neolithic of the Eastern Sahara (7,700 – 6,200 BP) (Close 1987).

Typologically, the projectile points spread across a range of the Hugot typology (1957). There are 18 points including unfinished and broken pieces, of these 12 are in C category (with 3 C1 types, 4 C2 types and 3 that fall between C1 and C2). D3 is the next most common form, having 3 representatives. There is a single D1 and the remaining pieces cannot be placed within the system. The types present are basically either foliate or triangular forms. Five pieces have tangs of which 2 are barbed and tanged (FJJ 044, ELH 002) whilst there is a barbed hollow-based point without a tang from GER 034 (C1) and two simply tanged (GER 030, GER 034). Significantly, there are five projectile points from GER 034, mostly bifacial foliates with a single tanged example. The frequency of points at this one site is notable and may reflect a retooling function for the site, with damaged points being replaced by new ones. There is a single unfinished point from GER 034 as well, which could support this suggestion.

8. The Late Pastoral

The Late Pastoral phase is identified by the presence of polished stone tools and 'exotic' pieces such as predynastic knives (Fig. 42.5). The presence of such pieces is suggestive of the human response to increasing aridity. As the environment dries so the population has to range further bringing them into contact with materials and probably people from much greater distances (possibly even the Nile Valley). Polished stone tools or fragments and flakes from them were found at (Fig. 42.6): GER 030, FUG 025, ELH 032, GER 016 (803) and GER 034. Predynastic knives were recovered from GER 030 and SCH 029 (Fig. 42.5). There were also four flaked stone axes of Holocene form which probably fall into the Late Pastoral from GSC area (Hamada), ZIN 905 (2 pieces), and GBD 001.

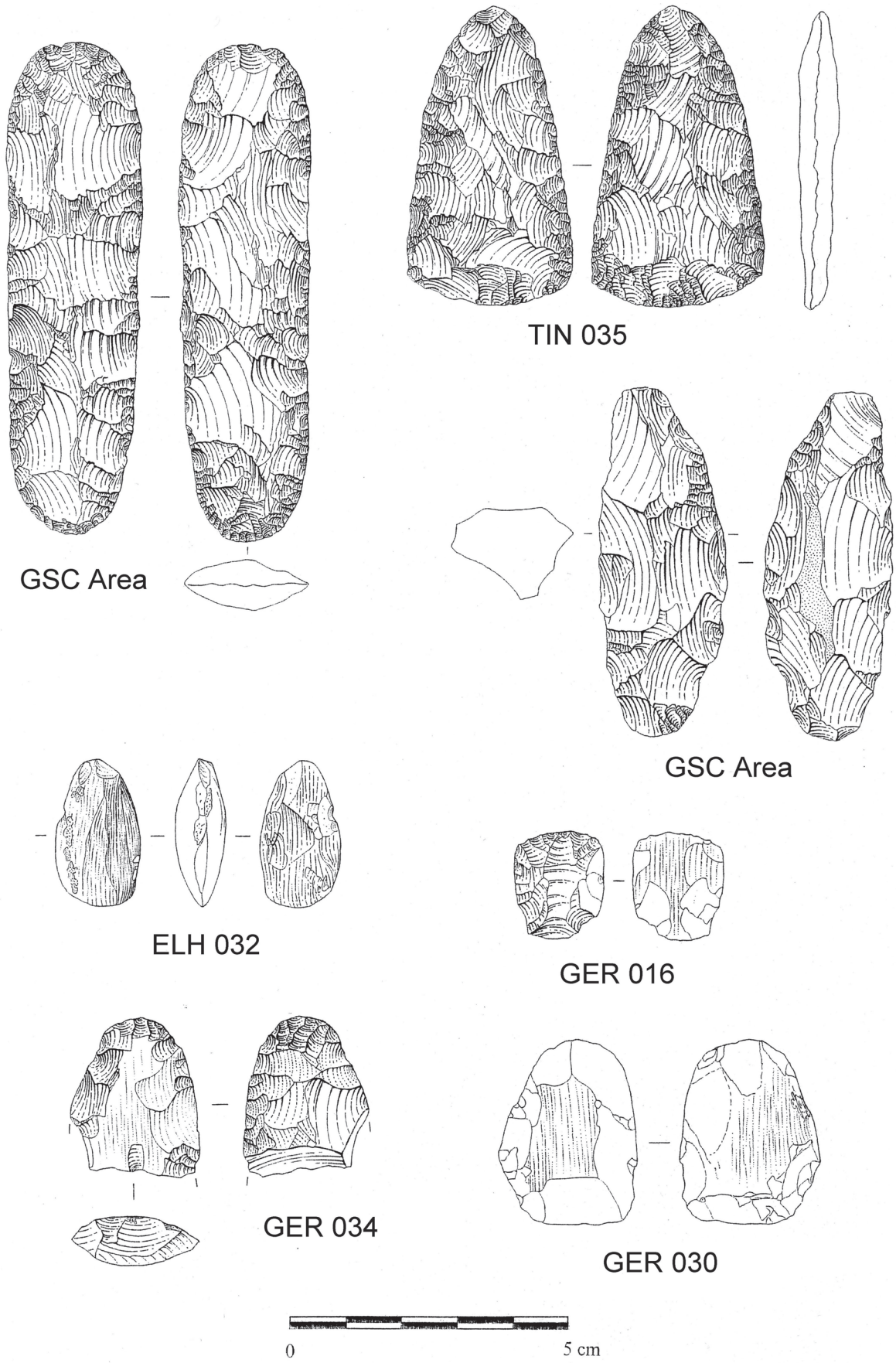


Figure 42.6. Holocene 'heavy duty' tools. GSC area, bifacial picks; TIN 035 bifacial axe; ELH 032 a small polished axe; GER 016 a small tanged and polished axe/adze; GER 034 and 030 polished and flaked axe fragments.

A small flaked pick was recovered from the Hamada at the same spot as the flaked axe.

A more detailed examination of the Massāk Ṣaṭṭafat area is now needed to provide an understanding of the few Holocene elements that have been recorded there. Another important development from the current work would be time spent on refitting studies of the collected material. A cursory attempt was made during the present analysis but time limitations precluded effective work. No refits were found during the analysis to date.

SECTION 43. METALLURGICAL AND NON-METALLURGICAL INDUSTRIAL ACTIVITIES

By I. Schrüfer-Kolb

Introduction

Throughout the Fazzān Project (FP), particular attention was paid to concentrations of industrial residues found at a number of sites in the Wadī al-Ajāl, providing evidence of both metallurgical and non-metallurgical activities involving pyro-technological processes. These were recognised principally during field survey, but a significant number of iron slags has also been found in the excavation at Old Jarma (GER 001). Whilst a full report on the excavated material will be included in the publication of that site (*AF* 4), some preliminary observations on that material and a full report on the survey finds is made here. A small quantity of metallurgical slags was collected by Charles Daniels (CMD) during his earlier fieldwork, though the material does not appear to have been fully analysed (brief notes taken from the CMD archive are appended to this report).

The principal aim was to examine the true identity and authenticity of various types of samples tentatively identified as 'slag', and to determine to what extent they were part of high temperature production techniques. This involved survey of sites with potential industrial residues in the field and a subsequent specialist analysis of relevant samples in the laboratory. As a result of in-depth materials analysis, two types of industrial debris can be distinguished for the Wadī al-Ajāl: metallurgical and non-metallurgical industrial residues. Details of individual samples can be found in Table 43.1.

In the field, samples could not always be easily distinguished by fieldworkers from natural concretions such as gypsum formations, calcified organic material, mud brick of various stages of dehydration and colour, and rock. In a desert environment, powerful erosion and chemical decomposition processes (Besler 1992) assimilate the outer appearance of fragmented geological (i.e. natural rock) and geo-related materials (formed artificially using geological resources). This is one of the specific problems encountered when analysing geological and geo-related samples originating from hyper-arid environments. To overcome it, hand-specimens of various geological materials including gypsum, sandstone, and mud brick were collected for comparative purposes to aid laboratory analysis.

In the field dark grey gypsum rock with holes and a rugged appearance can resemble slag, but in the laboratory it was confirmed that gypsum has a lower specific gravity. Gypsum also usually has a soapy surface, and, though it tends to have a bubbly appearance due to specific formation and/or erosion processes, it is often more flaky in texture. Similarly, the smoothed surfaces of black quartzitic sandstone, which normally shows sharp edges, can resemble vesicular slag, especially when the quartz pieces have been eroded away. It is easier to distinguish from slag than gypsum rock due to its grainy texture, although specific gravity is more similar.

Metallurgical slag

In the Wadī al-Ajāl, a major metalworking site has been recognised at Sāniat Jibrīl (GER 002) in the immediate vicinity of Old Jarma (*AF* 1, 121-22, 355-56; Mattingly *et al.* 2001, 143-44; Ruprechtsberger 1997, 75). This site produced the most substantial concentration of iron slag and copper alloy working debris. Metallurgical slag was recognised at 11 sites in total, including eight Garamantian settlement sites in the Wadī, two Garamantian cemeteries and an undated industrial complex. More intensive fieldwalking at additional known or suspected Garamantian settlements would almost certainly have raised the total further.

Sāniat Jibrīl

Sāniat Jibrīl (GER 002) was a satellite settlement just E of Garama (Old Jarma) and appears to have been a place of significant craft production. The settlement covers *c.*5ha and comprises numerous building complexes, one of which was excavated by CMD (Daniels 1971b; *AF* 3). Several substantial slag concentrations were recognised there in preliminary work by the FP and more detailed survey work was subsequently carried out, with specialist inspection of metallurgical material in 1999 and 2001.

Initial survey work indicated that there was a general spread of fairly small slag pieces stretching for *c.*100m across the site. One concentration was noted S of the excavated area, where small dumps containing iron slag, including hearth bottoms and one slagged iron piece, were found. A more extensive concentration of rather small pieces of slag was recognised N of the excavated structures. The spread extends for some 80m to the N of the main mud brick building, as far as the most N buildings of the settlement near the edge of the mud flats. No further evidence was found N of this structure. In 2001, it was noted that this slag concentration was connected to a significant number of ashy patches, one of which proved on excavation to overlie a hearth. We subsequently recorded and mapped by topographical survey all the patches (Fig. 43.1).

A total of 79 patches was identified, and these seem to relate to different industrial and domestic activities. Within the slag concentration N of the building, a particularly dense scatter of slag and many small fragments of copper alloy could be made out (radius *c.*15m). This relates to ashy patches nos. 1-19, which range from concentrations of dark grey ashy soil, fused sand/ash and charcoal underneath the slag (e.g. 1 and 2) to black

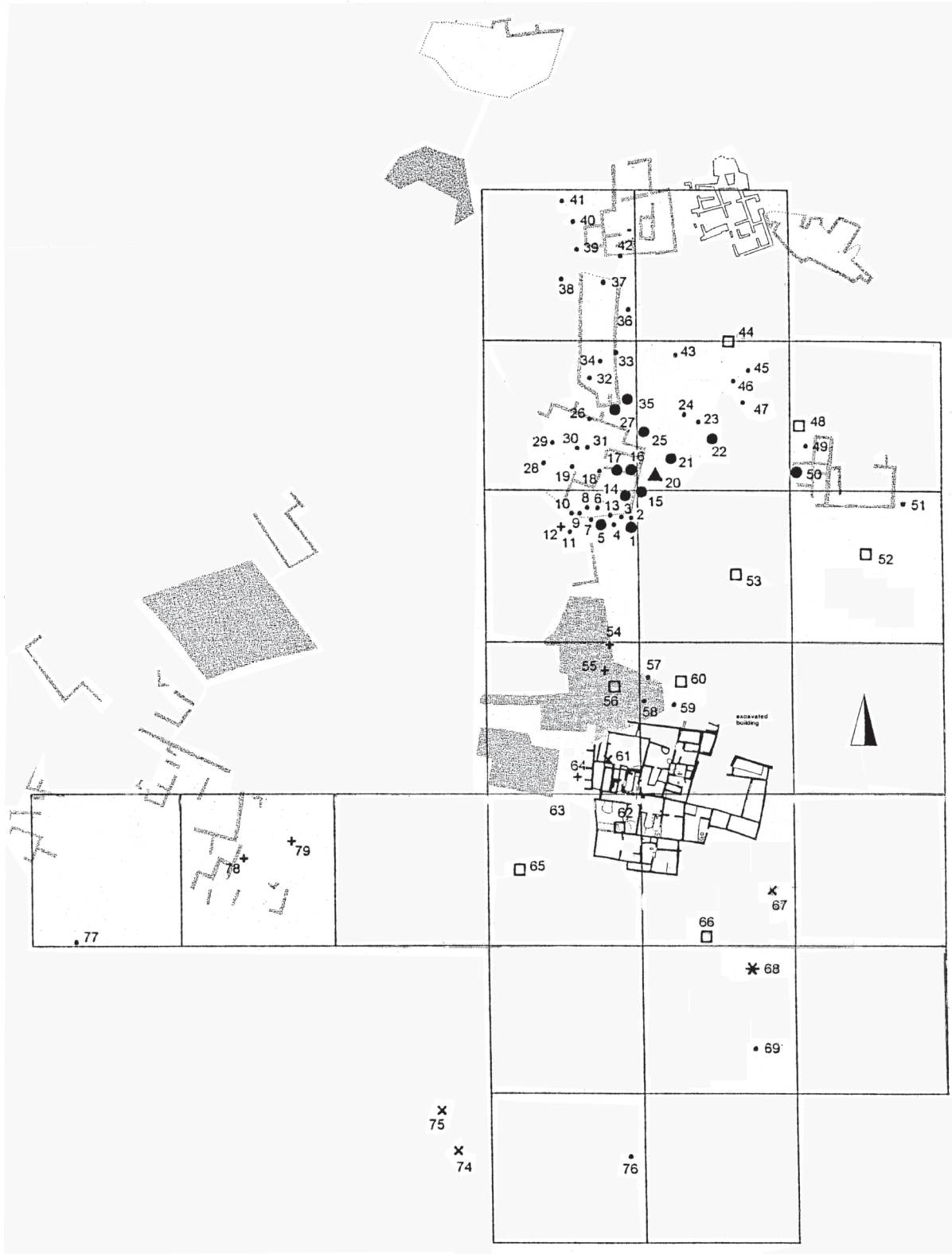


Figure 43.1. Suspected hearths at GER 002. Key: ▲ *= excavated hearth;* ● ● *= small/large deposits of dense ash, iron slag and fused sand;* □ *= ash, slag and calcined bone;* + *= ash and fused sand;* X *= ash and calcined bone;* ✱ *ash and gypsum (FP 2001).*

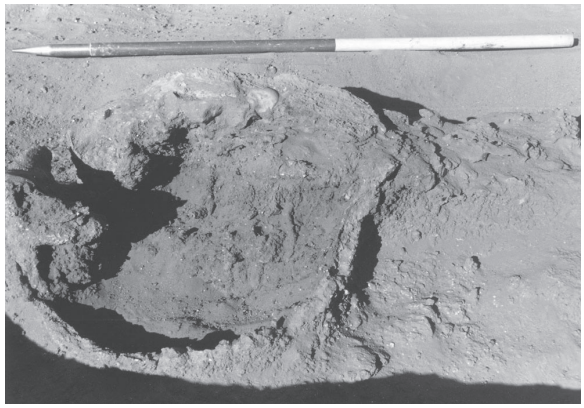


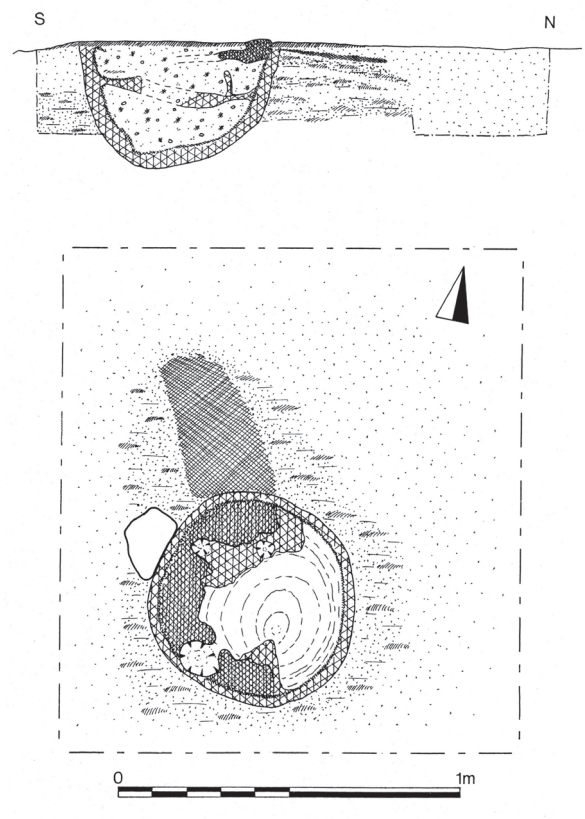
Figure 43.2. Photograph of the excavated hearth at GER 002 (photo: FP 2001).

charcoal-rich soil with compacted ash (e.g. 12), or light grey ashy soil (e.g. 7). A slag prill was found at patch 9, and the significance of this particular slag type is discussed below, in the section on Old Jarma. At patch no. 20, a roughly circular ash concentration *c.*80cm in diameter covered a hearth/furnace, which was excavated (see below). Similar sub-circular patches, *c.*120 to 150cm in diameter, were noted at no. 25, where again several slag prills were found, and at nos. 32, 35 (oval), 37 and 38. At nos. 44, 46, 48, 52, 53, 56, 60, 62, 65, and 66, in addition to slag, there are concentrations of fine bone splinters, but it is unclear whether this represents bone deliberately split for some purpose or natural decomposition processes. Two potential crucible fragments were found at no. 35 (a patch with much slag and several copper alloy flakes) and at no. 48 (with a glass droplet adhering to the inside of the sherd). The density of the slag spread and the size of individual pieces increases again to the E of hearth no. 20, around patch no. 50. The map indicates that the most intense metallurgical activity is concentrated in a strip *c.*50 x 25m in this N part of the settlement. From nos. 52 to 54, the colour of the ashy patches changes to light grey-bluish soil. The number of slags present decreases significantly, but concentrations of gypsum nodules can be noted on the ground, together with the splintered bones. This appears to represent the relics of a non-metallurgical process, perhaps gypsum and bone burning for calcium oxide retrieval. The patches around no. 61, on the other hand, appear to be domestic in origin with little to no slag present, and potentially relate to the main excavated mud brick building. Ashy soil at nos. 65/66 defines the spoil/waste tips SW of the building, and this spread extends across the road to the W.

Another concentration of slag was encountered to the S and SW of the excavated area. The spread is at its densest *c.*20m S of the building but then thins out considerably. Generally, it is less dense than the one to the N. Ashy patches connected with slag were recorded at no. 69, 70 (dense slag scatter), 71 (with splintered bone) and 76. At nos. 74/75, once again substantial concentrations of light grey-bluish soil, gypsum nodules, and splintered bone were identified. This could relate to gypsum burning, and samples have been taken to further investigate this. The overall impression is that metallurgical activity was less intense in the S part of the site and that other forms of pyro-technical processes were being carried out here.

To the W of the excavated area there are further buildings, but only a limited amount of slag was found there, though other finds suggest this was another area of craft manufacture. The ashy patches in this area (76-78+) seem to relate to mudbrick structures.

Throughout GER 002, the metallurgical residues predominantly comprise metal slag, often magnetic, and light siliceous slag, occasionally with fuel ash, including



Legend:

~~XXXX~~	Hearth lining – medium grey to brown sandy, hard-fired mud-brick.
xxxxxxx	Inner surfaces – slightly vitrified.
~~xxxx~~	Strongly vitrified top crust – medium grey, sandy mud-brick.
xxxx	Potential working platform – fine to hard nodular, yellow sand. Heat-affected to vitrified material. Near ground level.
#…° #	Hearth fill – soft, dirty brown, granular ashy material. Contains fused sand/hearth lining and charcoal/carbonised botanical remains.
//////////	Grey, ashy ground surface.
/// ___ … ///	Heat-affected sand.
……..	Fine yellow sand.
⬭	Grindstone.

Figure 43.3. Cross section and plan and of the excavated hearth (no. 20 on Fig. 43.1) at GER 002 (FP 2001).

numerous slag-crusts and small plano-convex cakes. In addition, charcoal fragments were found closely associated with some of the slags, and future research could provide information about the wood species employed and their dating potential. Numerous small fragments of copper alloy point also to intensive copper alloy working (Section 44, below 'Silver Alloy/Copper Alloy Artefacts').

The range of metallurgical debris encountered at the site suggests that the metallurgical processes carried out at Sāniat Jibrīl were large-scale iron smithing and copper alloy working. Judging from the scale of the manufacture as evidenced by the extent and density of the slag spread and from the morphology of some of the slags, some bloom refining is also very likely. The archaeological analysis of the slags provided no evidence of large-scale iron or copper smelting at the site: the numerous hearth bottoms (mostly small plano-convex cakes), slag prills, slag-crusts and light siliceous slags are indicative of iron working. Copper alloy production, on the other hand, leaves no slag except occasional runners and droplets of the alloy. However, tiny copper oxidation products on a small number of slags from Sāniat Jibrīl show how closely associated spatially and technologically iron and copper alloy working actually were at the site. Copper alloy flakes adhering to or their inclusion in the slags suggests that iron and copper were worked in one and the same hearth. This possibility is further explored in the next two sections. For this reason, by using archaeological slag analysis alone, it cannot be excluded that some of the slags identified as originating from the iron working process in fact incorporate also micro-evidence of non-ferrous metallurgical processes. The concentration of Roman silver alloy denarii found at this site (Section 44, below 'The Coins') hints at the possibility of silver working also, using the coins as bullion, though at present no archaeometallurgical proof of this has been found.

The entire scenario of finds and features at Sāniat Jibrīl creates a picture of a highly productive village, specialising in sophisticated craft manufacture including metalworking. The significant amount of semi-precious stone chippings, glass, beads, bead grinders and rings found together with the numerous small copper alloy fragments and slags at the site suggests a focus on jewellery production. The overall scarcity of iron fragments and, if found, poor state of preservation is noteworthy throughout the slag spread at Sāniat Jibrīl and fits in well with similar observations made during field survey and excavation. Two thirds of the copper alloy fragments recovered in grid survey came from N of the excavated area and this fits in well with the identification of this as the workshop area of an industrial site.

The hearth

Charles Daniels had excavated a 'furnace' in a courtyard in his area 4 at the site (see *AF* 3), and one slag collected at the site in 1999, a hearth bottom from the slag concentration N of the excavated area, showed a piece of hearth lining adhering to it. This indicates that iron was worked in a true hearth structure and not in a temporary fire or makeshift hearth on the ground. This was confirmed in 2001, when the excavation of another hearth significantly increased our knowledge regarding such features.

The site of the furnace was identified on the ground as a circular patch of ashy soil *c.*80cm in diameter. When this had been removed, just about 5cm below the surface, fused sand *c.*3cm thick appeared, covering the top of a circular furnace 75cm in diameter. The hearth was half-sectioned, with the E half taken away (Fig. 43.2; cf. *AF* 1, 356, fig. 9.20). The fused sandy top layer covering the feature proved very hard fired and might represent the collapse of the hearth superstructure (Fig. 43.3). The furnace interior was filled entirely with laminated layers of soft ash including fused sand/hearth material, which might again represent collapse, two slags, one copper alloy fragment, one copper alloy prill, some bones and a few very small pottery fragments. The ash also contained numerous small pieces of charcoal and other carbonised botanical remains. Several soil samples were taken to retrieve further metallurgical evidence, such as hammer-scale, and to identify the organic components. The lining consisted of a very sandy, medium grey to brown, hard-fired material – probably sand-tempered mud brick – and was *c.*6-10cm thick. The bottom of the hearth, a roughly hemispherical bowl, was reached at 40cm below the fused sandy top layer. Most interestingly, the hearth wall curved inwards at 19cm from the top, suggesting some floor or different horizontal chambers inside the hearth. A potential blowing hole was noted *c.*10cm from the top in the S-W part of the wall. Its external aperture measured 8cm across, the internal one 4-5cm. The thickness of the wall in this part was 13cm, and a cavity was observed between the outer and inner holes. A rectangular area of heat-affected sand and/or lining was noted adjoining the hearth lining to the N. This may have formed a working platform.

The two small slags, most likely smithing slags, the copper alloy sheet fragment and the copper alloy prill in the hearth fill suggest that the feature was used for both iron and copper alloy working. The bones and botanical remains however could imply that it was also used for domestic purposes. Consequently, the excavated feature seems to represent a multi-purpose hearth for both metalworking and perhaps other activities. The morphology of the hearth is unlike the typical domestic hearths of Garamantian date and the use in fairly high temperature pyro-technical processes is not in doubt. This fits in well with the evidence at Sāniat Jibrīl for intensive jewellery production within a village environment. The unusual inward curvature at mid-height of the hearth might represent a secondary relining of the hearth, but this is far from certain.

Field survey in the oases

In addition to the major iron working site at Sāniat Jibrīl (GER 002), evidence of iron working was identified at several other Garamantian settlement sites: TAG 020, ELH 005, GER 001, GER 016, TWE 028, TWE 029 and GBD 001. A particular concentration occurs at GER 016 (grids 901-948), where a total of 51 fragments of slag was counted, together with six fragments of copper alloy and a further six iron fragments. At least two potential clusters could be made out within the area of this large site. Additional find-spots of metallurgical slag include Garamantian cemeteries GER 011, ELH 001 (adjacent to ELH 005) and an undated (but probably Garamantian) industrial complex CHA 024 close to CHA 026/027. Details can be found in Table 43.1.

Archaeological analysis of the metallurgical slag attributes the samples to the iron production process (see also below, scientific analysis). Among a total of *c.*300 metallurgical slags examined from the 1997 to 2001 seasons, only five tiny copper oxidation products adhering to four samples from the field survey (three from GER 002 and one from ELH 005) were recognised. One hearth bottom with copper alloy inclusions from the excavations at GER 001 adds to this. No evidence for large-scale smelting activities in the form of big slag heaps or large plates of tap slag have been found to date. In fact, the metallurgical slag recognised so far predominantly comprises smaller pieces of less than 10cm side length. Samples examined in the laboratory include several hearth bottoms, numerous small plano-convex slag cakes and thin slag-crusts. Small pieces of light, vesicular siliceous slag are also common. These types of slag and the small number of (partly) vitrified fuel ash slags indicate smithing activities. The larger hearth bottoms and the runners of molten slag may also be evidence of bloom refining or the earlier stages of forging, when a substantial amount of slag is still included in the iron. The siliceous slags, on the other hand, might have formed by incorporating fused welding sand, which is used in the later stages of forging to remove surface impurities on the iron and for welding.

The samples collected from surface survey at these Garamantian sites broadly fit in with the picture of bloom refining and metalworking provided by the more detailed archaeological work at Sāniat Jibrīl (GER 002) and the excavation at Old Jarma (GER 001). Metalworking appears to have been a feature of many Garamantian villages.

Old Jarma

In addition to the metallurgical samples noted during fieldwalking, the excavation at Old Jarma (GER 001) has yielded iron smithing slags from various layers, including the Garamantian levels. While no slag was found in 1997, only one piece in 1998 and two examples in 1999, the number rose to four in 2000 and 12 metallurgical slags from the Garamantian levels excavated in 2001. As yet, it is unclear how much of the material from the upper layers of the site is residual, but from even this small sample, the Garamantian levels stand out.

The 1998 find is a typical plano-convex hearth bottom with a significant iron content. Of the two pieces found in 1999, one is a quite substantial hearth bottom with hearth lining still adhering to the bottom surface and fuel remains on top. The other sample is a characteristic piece of conglomerate smithing slag, showing rusty areas of corroded iron inside. In 2000, two light siliceous slags were found. These could originate from the use of welding sand, or from molten sandy hearth lining. Like hearth bottoms, they are indicators of smithing. One slag crust, one hearth bottom and compacted ash make up the rest of the 2000 material. In 2001 – in addition to two potential bone ash slags, four instances of compacted ash and a number of iron finds – four hearth bottoms, one potential bloom refining slag, one small molten metallurgical slag, one slag prill and four siliceous slags were found. The slag prill, of a type better described as spheroidal hammer-scale or slag spheres, is characteristic for the earlier stages of iron forging. These globules represent very small quantities of smelting slag still retained in the iron, which are driven out with force from the iron by the stroke of a hammer. They normally develop during fire welding or bloom forging (Starley 1995; Sim 1998, 99; 102). As they are normally not magnetic they can be detected only by careful sampling.

The above types of metallurgical slag can be expected in a densely settled town environment. They usually form in a designated smithing hearth or multi-purpose domestic hearth in a smithy or a household environment, where iron was forged to serve the needs of the town's inhabitants and perhaps beyond. In 2001, a hearth bottom with copper alloy inclusions from a Garamantian pit (GER 001 (*G1*, 919), SF2037) proved that at that time in Old Jarma iron and copper working were closely linked. Sometimes, both processes were even carried out in one and the same hearth, where they formed a common residue such as the above. The find indicates that both activities were not spatially separated craft activities, carried out by different professionals, but were undertaken in one and the same workshop, presumably by one and the same person. This however does not imply that copper alloy and iron working were not highly skilled craft activities at that time. On the contrary, two fragments of small copper ingot moulds from Garamantian rubbish pits hint at the presence of highly skilled metalworkers.

Iron working in the Wadī al-Ajāl in its context

Although the evidence for iron working in the Wadī is quite substantial the source of the iron ore is still uncertain. No pieces of iron ore have been identified so far by the FP and no smelting sites in the form of characteristic slag heaps or concentrations of furnace lining have been encountered so far during field survey. However, iron smithing is only the third major step in the production of iron, preceded by mining and smelting. Archaeometallurgical evidence

elsewhere speaks in favour of all stages of iron production having been comparatively closely associated spatially, and so there remains the question of the ore sources exploited for the iron forged in the Wadī.

The most likely ore source is to be found across the Ubārī sand sea to the N of Jarma. Major marine sedimentary iron deposits have been recognised in Wadī ash-Shāṭī, surveyed by the USGS in the 1950s (Goudarzi 1971). This deposit is one of the largest in the world, outcropping or underlying *c.*100km of the Wadī. The deposits are to be found in the lower layers of the Lower Carboniferous rocks at the N side of the Wadī. They comprise up to 11m thick beds of massive hematitic siltstone and oolitic to finely granular hematite, alternating with iron-enriched sandstone layers and limonitic clay stone (limonite, chamosite and some siderite). The ore contains both phosphoric and sulphuric components and is heavily permeated by petroliferous material in places. The iron content of the ore is 30-40% (US Library of Congress Country Studies/Area Handbooks Programme 2001) or 40-50% (Goudarzi 1971). From a modern economical point of view, this is not high-grade ore, but this verdict does not necessarily apply to the economies of ancient iron production, the more so as the richest sources may have been exhausted during classical antiquity. To what extent the hematite was successfully smelted in antiquity remains to be seen, but the limonitic deposits could have been an ore source used in ancient times. In addition, manganese – outcropping at several sites in the area in combination with the iron ores (including the ash-Shāṭī; Goudarzi 1971, 491) – could have played an important part in the ancient direct iron smelting. In this process, manganese could have successfully replaced the iron required for slagging off the gangue, thus preventing large amounts of iron being lost. It is possible that ancient mining and smelting sites were located in the Wadī ash-Shāṭī, though little archaeological research has yet been attempted there on Garamantian sites. There are several routes connecting the Wadī ash-Shāṭī and al-Ajāl, crossing the Ubārī sand sea in a NE-SW direction, and consolidated iron blooms could have been reasonably easily transported along these to Jarma and the other oasis settlements in the al-Ajāl. Other minor ore deposits are recognised in NW Tripolitania and the N Fazzān (US Library of Congress Country Studies/Area Handbooks Programme 2001) but these presumably did not affect iron production in the Garamantian heartland.

In 2001, I undertook a reconnaissance survey of the iron ore deposits in Fazzān. In the Wadī ash-Shāṭī, I explored the nature, stratigraphy and topography of the deposits and took samples of different ore types. It is hoped that future analysis will show how suitable they are for direct iron smelting. The geological variety of the ore deposits, their location within the Garamantian territory and the presence of some known pre-Islamic archaeological sites in the Wadī ash-Shāṭī suggest that this is the place to search for primary ancient smelting activity. Limited deposits of iron oxide have also been recognised in the Wadī al-Ajāl itself, for example, at al-Ghrayf. Characteristic red stains on querns from GER 001 (*G1*, 768, SF1537 and *G3*, 3017, SF816) show that these were used as a source of red ochre in antiquity. Although there are no major iron ore deposits in al-Ajāl, locally iron-enriched sandstone and clays are abundant and samples have been taken to examine their possible relationship with metallurgical activities.

Non-metallurgical industrial residues

In addition to the metallurgical slags, one peculiar type of non-metallurgical residue was first recognised during the 1998 season at al-Ḥaṭīya (ELH 001, 002 and 008). Further concentrations were recognised in 1999 and 2000, with yet more material sampled in 2001. Tentatively identified as 'salt slag' (in analogy to similar – but not identical – pieces displayed in the museum at Jarma, identified by H. Ziegert, University of Hamburg), my work has focussed on investigating their geo-chemical composition and their potential formation processes.

The material is light to medium grey in colour and very light in weight (a fuller description will be published elsewhere together with XRF analysis). Its texture varies from foamy (e.g. at TWE 028) to grainy/gritty (e.g. at CHA 026/027) and generally tends to be rather fragile. Samples take the form of small lumps up to fist size, as well as small crusts. The appearance of the pieces is often very ropy, indicating that the material must have been thoroughly molten. Many of the residues display a greenish-grey glassy surface and are highly vesicular. This material was found during the 1999 field survey in the oasis settlements, predominantly accumulated in small heaps of 1-2m diameter, consisting of sand, loose and compacted ash, charcoal and the residues. Often, fuel impressions or inclusions can be found in the material, and occasionally the fuel remains preserved uncharred within the samples. This is surprising as it indicates that, despite their molten appearance, the residues appear not to have been treated to very high temperatures. However, it is also possible that the residues have spilled out over unburnt fuel. Further investigation into the chemical and mineralogical composition of this unusual sample type is needed. Still, the fuel and charcoal inclusions helped to understand better the formation of the material.

The sample from ELH 002 was found together with a substantial amount of charcoal, and uncharred fibrous inclusions. These inclusions were large enough to allow them to be matched with modern tree species. Comparison with bark and twigs of modern palm trees suggests the fuel used was palm. However, at present we do not know whether the palm was burnt in its own right to obtain some desired product to be used in another process or whether it was simply the fuel for a pyro-technological process not yet fully understood. Therefore, until any better identification of the samples is achieved, it is suggested to address this type of non-metallurgical industrial residue as palm ash slag.

Potentially related processes

Potentially related material has previously been reported to originate from similar archaeological contexts. On the basis of fieldwork and smelting experiments conducted at Qaṣr Būdrinna in the late 1960s, Ziegert suggests a relationship of glassy, green to blackish, very hard slags – encountered in small ash and slag heaps in a salt flat environment – with a specific salt refining process (Ziegert 1974). Small shafts encountered by him during trial trenching seem to suggest that in this process salt was dug from the extensive salt surface crust in the Wadī. Amongst other sodium compounds the salt crust contains a little sodium chloride (NaCl). Archaeological evidence suggests that the salt was cleaned from sand and burnt with palm wood in a small conical heap of charcoal (c.1m diameter and 1m high) with a flue below (1m long by 15cm wide and deep) to channel the wind (Ziegert 1974, 30). Although the exact transformation processes are not described, the result of the burning appears to be molten salt, as mentioned by him to have formed in the cavities of palm logs used in the smelting. After half of the fuel was burnt, the salt crusts were put in the glowing fire on top of the heap, covered with pieces of palm wood and left to burn out. Ziegert notes that the heavy residues of the process remained on the heap, whereas the light green slags and ashes from the surface of the heap were taken away to be boiled in water. The resulting salt solution was then poured in rectangular moulds and left to evaporate. The result was pure NaCl for dietary purposes. Unfortunately, the report does not support these observations by more detailed archaeological or scientific information, but when comparing them with our samples it should be noted that most of the residues investigated by Ziegert – in marked contrast to our samples – are described as very hard and heavy. Other factors, on the other hand, seem to match Ziegert's observations rather well. These are the colour of the samples including their glazed surfaces, their deposition in small heaps together with palm wood, the melting implied by the ropy nature of the pieces and the uncharred fuel inclusions, potentially originating from the processes carried out at top of the heap. There are however some difficulties with finding parallels for this sort of production technique in present day traditonal approaches to salt-making in the Sahara (Lovejoy 1986; Vikor 1999).

Site inspections in 2001 yielded probable salt lumps associated with the palm ash slag at Tuwash (TWE 028 and TWE 029) and salt inclusions in the heat affected sandy ground surface encountered at TWE 028. Examination of the samples on display in the museum at Jarma also showed salt inclusions in the residues. This seems to confirm that the palm ash slags are indeed related to salt production or refining involving fire treatment. The exact nature of their formation processes however remains to be understood. Reconnaissance survey of the salt flat to the N of GER 016 and TWE 028, revealed numerous ashy patches associated with non-metalliferous residues (for example at TWE 029). These features were associated with Garamantian pottery and placed along embankments built out over the salt flat (TWE 023). In the best-preserved example a substantial furnace structure was identified, covered with palm ash slag and potential salt lumps (Fig. 43.4). This area appears to have been a Garamantian industrial complex and its location in the middle of the salt flat strongly supports a connection with the salt production process.

Figure 43.4. View of hearth at TWE 029 (photo: FP 2001).

Sites and concentrations

Palm ash slags have now been recognised at ELH 001, ELH 002, ELH 008, GER 016, CHA 024 (where there are also possibly related production features), CHA 026/027, CHA 030, TWE 028 (including related ash burning heaps), TWE 029 and GBD 001. Small pieces of palm ash slag or fuel ash slag were also found at GER 002. A common factor is that all these sites lie closely adjacent to salt flats. At CHA 024, ELH 001, GER 002, GER 016, TWE 028, TWE 029 and GBD 001 there was also metallurgical slag found in addition to the palm ash slag. This indicates that both salt production/refining and iron working were carried out at these sites. It is not clear however to what extent the two processes were directly linked, as salt corrodes iron very quickly.

CHA 024 is an industrial complex with at least four furnaces/hearths aligned in a W-E row (Fig. 43.5). The features were D-shaped and their fronts were missing. They measured *c.*80cm in diameter externally and the walls *c.*15cm in thickness. The linings were of a light grey colour (potentially reduced fired) and consisted of a crumbly, sandy material. Several phases of relining were visible and from the second feature a small amount of charcoal and some organic temper of the furnace/hearth lining were retrieved. In the fourth furnace, a piece of iron was found. Beyond the fourth furnace, still in the same line with them, was a shallow heap of sandstone *c.*1.50m in diameter. An ash deposit underlay the stones. In the centre of this deposit, there was a rectangular to trapezoidal shaft measuring *c.*30cm wide and *c.*60cm deep

Figure 43.5. View of furnaces CHA 024 (photo: FP 1999).

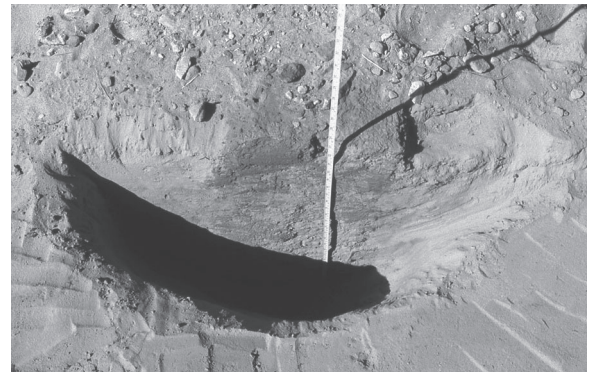


Figure 43.6. Section through compacted ash shaft beneath rubble heap at CHA 024 (photo: FP 1999).

(as excavated) and filled with compacted ash and charcoal fines (Fig. 43.6). The last feature in the row represented a circular cooking hearth (tanur) with red-fired hearth lining and a grey interior. Its walls were rather thin (*c.*3cm) and the entire feature measured *c.*50cm in diameter. At right angles to the row of furnaces, about 10m to the N of the most W furnace, there was a substantial palm ash slag heap and, adjacent to it to the N, a shell and bone heap. The concentration of shell and bone in a heap suggests their deliberate use, potentially associated with the processes relating to the palm ash slags. These in turn may have been related to – or even formed – in the furnaces to the S of the heap, potentially indicating a sequence of distinct industrial processes carried out at the site. No diagnostic archaeological material for dating was retrieved from the industrial features, but charcoal sampled from the furnaces holds the potential for radiocarbon dating.

Age and potential uses of the material

Despite the valuable information gathered on the archaeological context of the palm ash slags their antiquity remains to be proved. Ziegert dates the ash heaps he investigated to the 3rd century BC (erroneously for AD?) and additional structural evidence to the 4th to 5th centuries AD (Ziegert 1974, 29-30). He also refers to a salt block, part of a burial near Tall bin Daraba/al-Zūwīya, of the 3rd century AD (Ziegert 1974, 31), but the respective dating evidence is not mentioned.

As regards the FP sites, with the exception of the undated CHA 024, all are Garamantian. CHA 026/027, CHA 030 and TWE 028 are settlements broadly dating to the 1st-4th centuries AD. GER 016 appears to have originated in the latter centuries BC and in addition to abundant Garamantian material has a small amount of Islamic sherds. Material from TWE 029 is Garamantian, with more diagnostic pieces of 1st-2nd century date. Of particular interest for the dating of the palm ash slags are the concentrations at the cemetery sites ELH 001 (adjacent to settlement ELH 005) and ELH 002 (nearby ELH 008). Some of the spreads of the residues and ash extend between the pyramid tombs here (for example, ELH 002.48 and ELH 002.57), indicating secondary industrial activity in the cemetery area. However, the time lag between the erection of the tombs and the industrial activity need not have been vast. There are no Islamic villages in this part of the Wadī and a late antique date for the industrial residues is perhaps most likely. (For similar evidence of Roman industrial debris being dumped within slightly earlier cemeteries at the site of Leptiminus in Tunisia, see Stirling *et al.* 2001, 164, 218).

Although this stands in contrast to the archaeological dating evidence from the sites, we cannot exclude the possibility that the heaps themselves are not very old. This however does not mean the process does not date back to ancient times, and perhaps Garamantian sites were revisited at a later date for industrial purposes. To resolve the issue, we plan to obtain radiocarbon dating of some of the samples.

In addition to the salt-refining process suggested by Ziegert, it is also possible that the palm was burnt to obtain plant ash. Plant ash is known to make a good agricultural fertiliser but the palm could also have been burnt to obtain soda ash (sodium carbonate) or potash (potassium carbonate) from it. While potash has been used for centuries for lye and soap, leached from wood ashes (*cf.* ash burning in the British Lake District), these alkalis can also be used in the glass-making process. Silica, lime and soda are the principal constituents of soda-lime glass, the common type of glass produced in the past. While silica is readily available through sand, the presence of a bone/shell heap at CHA 024 could indicate their use as a source of calcium in a process to which the palm ash slags – and perhaps the furnaces at CHA 024 – are linked. Potash, on the other hand, is known as an important constituent of glazes already in Dynastic Egypt, as is natron (sodium carbonate). The probable lumps of salt found with the palm ash slags at TWE 028 and TWE 029 suggest a connection of the residues with salt-making but could also be a source of sodium carbonate for the glass-making process. On the other hand, there are extensive deposits of pure natron available from the lake of aṭ-Ṭrūnah in the Ubārī sand sea, which was a major export from the region in more recent times (Bruce-Lockhart and Wright 2000, 111-13).

Scientific analysis of selected residues

As a first step towards a better understanding of the pyro-technological formation processes of both the metallurgical and non-metallurgical residues, two selected representative samples were submitted for microscopic analysis to the Archaeometallurgy Research Group, Department of Geosciences, Johannes-Gutenberg-Universität Mainz, Germany.

The submitted samples, one metallurgical slag and one non-metallurgical industrial residue, were chosen for their particular archaeological contexts. The metallurgical slag (Sample no. ELH 005 (Transect 512, SF1075) comes from a Garamantian village where no specific pyro-technical features were identified by surface survey. The mineralogical analysis sheds light on the type of metallurgy and process stage carried out.

The non-metallurgical residue (Sample no. CHA 024), a type initially identified as palm ash slag, originates from an industrial site (see above). A row of furnaces and heaps of palm ash slag and bone and shell were found there, suggesting a well-defined production process. While the exact date of the site is not yet known the residues suggest a relationship with either salt refining (Ziegert 1974) or, in view of the furnaces and the shell and bone heap, potentially glass-making. It was hoped that the mineralogy of the submitted sample could provide some clarity about the composition, and therefore formation process, of the residues.

Through optical mineralogical analysis of polished thin sections, using a polarising microscope, the following preliminary results were obtained (Ingo Keesmann, internal report 11/04/01).

The metallurgical slag from ELH 005 (Laboratory sample code 2883, Inv. No. 000609/4) is a very heterogeneous, vesicular slag, showing dark and achromatic areas (Fig. 43.7). The achromatic areas are highly vitreous, with melting quartz and few opaque ingredients (presumably iron-rich heavy minerals originating from the sand). This appears to represent the sandy lining of a feature related to a pyro-technical process. The dark areas, clearly defined by their colour, are fayalitic (fayalite = iron silicate; Fe_2SiO_4), with in parts high proportions of greenish-brown/yellow pleochroic (i.e. selectively absorbing light in crystals clinopyroxenes – presumably hedenbergitic (hedenbergite = calcium iron silicate; $CaFeSi_2O_6$) in close relationship with fayalite. The oxides in these dark areas are hematite (ferric oxide; Fe_2O_3) more or less closely related to magnetite (Fe_3O_4), magnetite and iscorite (iron silicate; $Fe^{+2}{}_5Fe^{+3}{}_2SiO_{10}$). These oxides indicate higher to very high stages of oxidation in the sample. In one area near the fringe there is also wuestite (ferrous oxide; FeO), however with separating magnetite, i.e. with higher contents of Fe(III). The slag contains tiny metallic inclusions, presumably iron, in the wuestite as well as in the fayalite. In addition, highly reflecting white metal (iron?) is also sporadically present in the form of cloudy clusters of tiny globules surrounded by dark glass. The above results suggest that the sample derives from an iron-working process and contains a substantial amount of hearth lining. The presence of clinopyroxenes shows that the amount of CaO in the slag is above the one normally to be expected in iron-rich smelting slags. This could indicate the use of a calcium-rich flux in the ironworking process, potentially to influence the distribution of elements such as sulfur and phosphorus in the iron.

The other sample, the non-metallurgical industrial residue from CHA 024 (Laboratory sample code 2885, Inv. No. 000609/2), is vitreous and displays sub-parallel zones of vesicles. Microscopically, this is achromatic, light yellowish to very light brown glass with numerous included quartz grains. In some of the linear zones, partial crystallisation originating from individual quartz grains can be observed (Fig. 43.8). Here, achromatic, feathery to coarsely prismatic crystals have formed. They are rhombic in cross section and with an inclined extinction under crossed polarisers, presumably wollastonite with a low iron content (calcium silicate: $(Ca,Fe)SiO_3$). The refracting index of the glass is smaller than the one of the quartz (n = 1.54), but increases to significantly above 1.54 in areas of beginning crystallisation. This seems to reflect several streaks within the glass phase, this way potentially indicating a considerable variation in its composition.

The sample shows isolated, but very few overall,

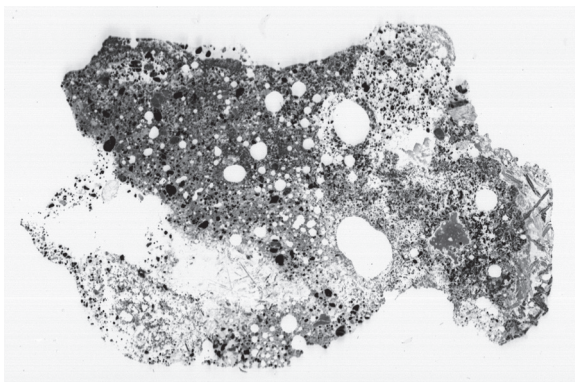


Figure 43.7. Micrograph of metallurgical slag from ELH 005 (image: Ingo Keesman).

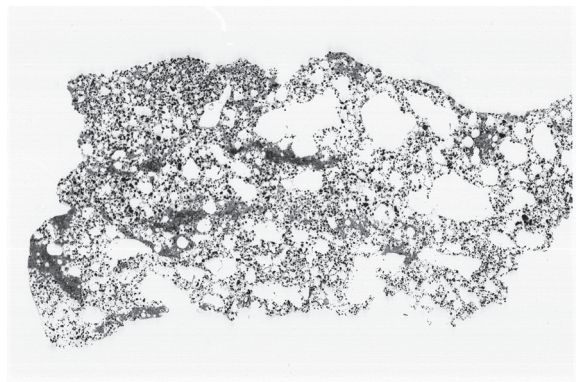


Figure 43.8. Micrograph of non-metallurgical industrial residue from CHA 024 (image: Ingo Keesman).

inclusions of dark ingredients, some of which partially react with the melt. These appear to be heavy minerals originating from the sand (amongst others ilmenite – $FeTiO_3$; primary and secondary rutile – TiO_2). The sample contains no metal, nor iron oxides, and this would seem to exclude a relationship with a metallurgical process. However, the genesis of this residue of a smelting process could not be deduced from the results of the optical analysis. A more detailed examination by geo-chemical microanalysis (EMPA or SEM-EDX) of the amorphous glass phase could indicate whether its composition is primarily calcium or sodium-based. This would offer the possibility of attributing the residue more closely to the salt refining or any other pyro-technical process.

In order to better understand the chemical composition of this particular sample type, at the time of writing, X-ray fluorescence spectrometry (XRF) analysis is in progress and the results will be discussed elsewhere.

Geological material in archaeological contexts

During fieldwalking, a substantial amount of gypsum rock was encountered in the oasis settlements. As gypsum and calcified organic matter form in sand sea and playa environments rather than in the oasis it might be possible that this material was brought into the settlements for a specific purpose. Further scientific analysis of this type of material could show whether the material is entirely natural and brought into the settlement sites, perhaps for building purposes, or whether it derives from industrial processes 'imitating' natural processes, such as gypsum refinement and/or cement-making.

Gypsum ($CaSO_4$ $2H_2O$) is a source of calcium and could have been dehydrated and/or burnt for building purposes, as a cementing agent and technical binder, such as portland cement or plaster of paris. The use of rehydrated calcined gypsum is also well known for stucco and cement floors (Schumann 1973, 122). The FP excavations at Jarma have found occasional thin washes of lime plaster, for instance on floors, wall abutments and cooking platforms, but in general the use of such lime-based mortars is much less common than cruder mud plaster. Although the Garamantian and medieval architecture of the Wadī al-Ajāl was primarily based on mudbrick construction (with some use of stone socles in the former period), there are a few structures where lime mortar was utilised. This may account for the hints at some of our sites for an industrial process involving gypsum. There is some potential evidence for gypsum burning in the form of gypsum fragments associated with some of the distinctive ashy patches at Sāniat Jibrīl (GER 002 nos. 74 and 75). Moreover, ethnographic sources mention the use of lightweight gypsum in the construction of vaults, domes and arches in Fazzān (Vietta 1939, 56-57), and this could be a further reason for the collection of gypsum fragments on oasis centre sites.

Appendix: A note on slag samples collected by CMD (compiled from notes in his archive)

[Editor] A number of samples of ore, slag and metal were apparently recovered from CMD's various excavations and appear to have been in Newcastle at some point. CMD evidently consulted various specialists and some visual inspection was made, though not, as far as can be determined now, any chemical analyses. The present whereabouts of the material is unfortunately not known. The following brief notes suggest that the material was broadly similar to the metal slags commented on above. However, the presence of possible smelting and smithing slags on Zinkekrā adds a significant element to the picture. The ore samples, identified by one of CMD's contacts as mainly limonite, are also of interest and suggest that in the latter centuries BC at Zinkekrā, some smelting was taking place in the Wadī al-Ajāl. At present, the material from Zinkekrā represents the earliest attested metallurgy in Fazzān. ZIN 001.034 was a small building on the top of the spur controlling the head of the path up the N side (sometimes referred to as ZIN 034). Associated finds suggest a date in the latter centuries BC. ZIN 002.011, on the N slope, comprised a complex of buildings probably dating to the 3rd-1st centuries BC (sometimes referred to as ZIN 011). The ore, slag and iron fragments were found around a hearth built into the SW corner of room 10 (Daniels 1968, 142-50, designated this Room J, but did not mention the metallurgical finds). Finds from the site ZIN 002.013 (also on the N side of the hill and sometimes referred to as ZIN 013) most likely date to same 3rd–1st century BC range.

Zinkekrā

Ore

ZIN 002.011 (also ZIN 011) SW corner of room. Samples identified as limonite from contexts (26), (28), (35) and (general). The material is described as follows: "Much of the sample seems to be limonite, but some is a richer substance – hematite (purple and dark streaks running in bands across the substance). Not magnetic, but still strong in iron. Looks like very good ore."
ZIN 002.013 (also ZIN 013) (35). Probable sample of limonite.

Slag

ZIN 001.034 (also ZIN 034) (1,3). Glassy slag (?). One piece described as: "From an iron working furnace. It is a little dribble, showing the furnace is near at hand."
ZIN 002.11 (10). Slag.
ZIN 002.013 (4). Glassy slag.

Jarma

Slag

GER 001.1 (9). Smithing or smelting slag? Very dense.
GER 001.1 (2). Furnace bottom from a smithing hearth, in sand with charcoal and metal adhering.
GER 001.4 (28). Smithing slag.

Sāniat Jibrīl

Slag

GER 002 (1, 2). Probable smithing slag.
GER 002 (2, general). Light, glassy slag. Not necessarily iron.
GER 002 (4, 1/1). Probable smithing slag.
GER 002 (5, 4/5). Smithing slag.
GER 002 (general). 'Smithing cinder'?

Table 43.1. List of slag and other pyrotechnical residues from survey and excavation in Fazzān.

Site no.	Area/Grid	method	wt (g)	no. frags	type	Season
CHA 024		grab	283.3	3	iron-enriched sandstone	FP1999
CHA 024		grab	92.9	3	iron-enriched sandstone	FP1999
CHA 024		grab	90.0	4+	palm ash slag	FP1999
CHA 024		grab	89.9	3	iron-enriched sandstone	FP1999
CHA 024		grab	58.8	1	iron-enriched sandstone	FP1999
CHA 024	F2	excav.	33.3	3+	hearth lining	FP1999
CHA 024	F4	excav.	19.8	3+	hearth lining	FP1999
CHA 024	F4	grab	9.1	1	iron (SF2120)	FP1999
CHA 024	F5	grab	404.3	16	iron-enriched sandstone	FP1999
CHA 024	F5	excav.	137.2	5+	compacted ash, soil and sand	FP1999
CHA 024	F6	excav.	124.6	15+	hearth lining	FP1999
CHA 024		grab	14.5	1	metallurgical slag	FP2001
CHA 026/027	N of TR1025	grab	60.0	8	palm ash slag	FP1999
CHA 026/027	N of TR1025	grab	15.5	5	palm ash slag	FP1999
CHA 026/027	TR1018	grid	116.1	16+	palm ash slag	FP1999
CHA 026/027	TR1023	grid	1.6	1	palm ash slag	FP1999
CHA 026/027	TR1023	grid	8.3	1	palm ash slag	FP1999
CHA 026/027		grab	34.7	10+	palm ash slag	FP2001
CHA 030		grab	107.7	20+	palm ash slag	FP2001
ELH 001		grab	197.9	7	palm ash slag (SF2028)	FP1998
ELH 001		grab	45.6	1	metallurgical slag (SF2028)	FP1998
ELH 001		grab	30.7	1	sandstone with fused palm ash or erosion (SF2028)	FP1998
ELH 001		grab	65.0	11+	palm ash slag (SF2029)	FP1998
ELH 002		grab	318.7	12+	palm ash slag (SF2049)	FP1998
ELH 002		grab	7.6	8+	charcoal (SF2049)	FP1998
ELH 005	TR511	grid	3.6	1	light, siliceous slag (SF1079)	FP1998
ELH 005	TR512	grid	50.0	3	metallurgical slag (SF1074)	FP1998
ELH 005	TR514	grid	39.8	1	metallurgical slag (SF1094)	FP1998
ELH 008		grid	57.8	2	palm ash slag (SF2051)	FP1998
GBD 001		grab	77.5	2	slag crusts with fuel ash	FP2000

Site no.	Area/Grid	method	wt (g)	no. frags	type	Season
GBD 001	SW quad	grab	56.1	1	metallurgical slag	FP2000
GER 001	G1 (44)	excav.			hearth bottom (SF 100)	FP1998
GER 001	G1 (331)	excav.	510.0	1	hearth bottom (SF 280)	FP1999
GER 001	G1 (352)	excav.	222.9	many frags	compacted ash, soil and sand, some fuel (SF 512)	FP2000
GER 001	G1 (440)	excav.	78.4	1	smithing slag (SF458)	FP1999
GER 001	G1 (574)	excav.	89.3	1	hearth bottom, charcoal (SF562)	FP2000
GER 001	G1 (607)	excav.	28.9	1	slag crust with gypsum concretions (SF738)	FP2000
GER 001	G1 (608/618/517)	excav.			conglomerate smithing slag (SF1231)	FP2001
GER 001	G1 (613)	excav.	18.4	1	iron	FP2000
GER 001	G1 (653)	excav.	30.8	1	siliceous ashy slag (SF968)	FP2000
GER 001	G1 (672)	excav.			?bone ash slag nodule (SF1552)	FP2001
GER 001	G1 (706)	excav.			?bone ash slag and vitrified bone (SF1312)	FP2001
GER 001	G1 (726)	excav.			slag prill (SF1239)	FP2001
GER 001	G1 (739)	excav.			hearth bottom (SF1318)	FP2001
GER 001	G1 (745)	excav.			compacted ash (SF1397)	FP2001
GER 001	G1 (747)	excav.			siliceous slag (SF1283)	FP2001
GER 001	G1 (747)	excav.			silicate slag runner (SF1282)	FP2001
GER 001	G1 (748)	excav.	2.2	1	iron (SF1289)	FP2001
GER 001	G1 (748)	excav.	3.5	1	iron (SF1359)	FP2001
GER 001	G1 (769)	excav.			siliceous ?fuel ash slag (SF1550)	FP2001
GER 001	G1 (827)	excav.			smithing/?bloom refining slag (SF642)	FP2001
GER 001	G1 (867)	excav.	5.1	1	iron (SF1889)	FP2001
GER 001	G1 (889)	excav.			hearth bottom (SF1821)	FP2001
GER 001	G1 (889)	excav.			siliceous slag (SF1840)	FP2001
GER 001	G1 (897)	excav.			compacted ash (SF1973)	FP2001
GER 001	G1 (914)	excav.			compacted ash (SF1978)	FP2001
GER 001	G1 (918)	excav.			compacted ash (SF1988)	FP2001
GER 001	G1 (919)	excav.	12.8	1	metallurgical slag	FP2001
GER 001	G1 (919)	excav.			hearth bottom with Cu-alloy (SF2037)	FP2001
GER 001	G1 (855)	excav.			hearth bottom (SF1931)	FP2001
GER 001	G1 (u/s)	grab	26.1	1	siliceous ashy slag	FP2000
GER 001	G3 (3034)	excav.	116.3	1	fused compacted ash/sand	FP2000
GER 001	G4 (4004)	excav.			?fuel ash slag, iron-related, siliceous (SF2001)	FP2001
GER 001	by Bldg 1	grab	12.9	1	metallurgical slag	FP2001
GER 002	001	grid	3.2	1	light, siliceous slag (SF1036)	FP1997
GER 002	002	grid	68.2	1	light, siliceous slag (SF1034)	FP1997

Site no.	Area/Grid	method	wt (g)	no. frags	type	Season
GER 002	010	grid	16.1	1	iron (SF1032)	FP1997
GER 002	010	grid	10.3	1	light, siliceous metallurgical slag (SF1032)	FP1997
GER 002	014	grid	9.7	1	siliceous metallurgical slag crust (SF1037)	FP1997
GER 002		grab	152.4	1	hearth bottom	FP1998
GER 002		grab	47.3	1	metallurgical slag crust on vitrified surface	FP1998
GER 002		grab	7.9	1	light siliceous metallugical slag	FP1998
GER 002	CMD excav. area	grab	781.4	62	metallic and light siliceous slag; some with fuel ash	FP1999
GER 002	CMD excav. area	grab	19.2	2	iron	FP1999
GER 002	N of excav.	grab	482.0	72	metallic and light siliceous slag; some with fuel ash	FP1999
GER 002	N of excav.	grab	362.2	14	metallic and light siliceous slag; some with fuel ash	FP1999
GER 002	N of excav.	grab	208.2	2	hearth bottom; several charcoal pieces	FP1999
GER 002	N of excav.	grab	16.3	1	iron-enriched sandstone	FP1999
GER 002	N of excav.	grab	7.5	3	iron	FP1999
GER 002	N of excav.	grab	3.4	2	charcoal	FP1999
GER 002	S of excav.	grab	224.1	4	metallurgical slag	FP2001
GER 002	S/SW of excav.	grab	flakes	12	iron	FP1999
GER 002	S/SW of excav.	grab	317.9	19	metallic and light siliceous slag; some with fuel ash	FP1999
GER 002	S/SW of excav.	grab	25.0	4	iron-enriched sandstone	FP1999
GER 002	S/SW of excav.	grab	1.4	1	heavily vitrified fuel ash slag	FP1999
GER 002	W of excav.	grab	flakes	3	copper alloy	FP1999
GER 002	W of excav.	grab	288.1	35	metallic and light siliceous slag; some with fuel ash	FP1999
GER 002	W of excav.	grab	1.8	1	charcoal	FP1999
GER 002		grab	122.3	1	hearth bottom	FP2000
GER 002		grab	29.0	1	metallurgical slag	FP2000
GER 002	G01	grid	0.4	1	slag spheroid	FP2000
GER 002	G01	grid	2.5	2	fuel ash slag or palm ash slag	FP2000
GER 002	G02	grid	15.1	1	metallurgical slag	FP2000
GER 002	G02	grid	4.4	1	lining with fused fuel ash slag	FP2000
GER 002	G02	grid	1.0	1	metallurgical slag	FP2000
GER 002	G02	grid	1.7	1	light, siliceous slag	FP2000
GER 002	G03	grid	4.9	2	Cu-alloy (SF1165)	FP2000
GER 002	G03	grid	5.1	1	metallurgical slag	FP2000
GER 002	G04	grid	1.7	1	light, siliceous slag	FP2000
GER 002	G08	grid	8.9	1	light, siliceous slag	FP2000

Site no.	Area/Grid	method	wt (g)	no. frags	type	Season
GER 002	G08	grid	2.5	1	light, siliceous slag	FP2000
GER 002	G08	grid	6.5	1	metallurgical slag	FP2000
GER 002	G08	grid	5.2	2	fuel ash slag	FP2000
GER 002	G09	grid	0.5	1	fuel ash slag or palm ash slag	FP2000
GER 002	G09	grid	0.5	1	mud brick or lining fragment	FP2000
GER 002	G10	grid	21.0	1	hearth bottom	FP2000
GER 002	G10	grid	4.2	4	Cu-alloy (SF1146)	FP2000
GER 002	G11	grid	13.4	1	metallurgical slag	FP2000
GER 002	G11	grid	14.1	4	metallurgical slag	FP2000
GER 002	G12	grid	6.2	1	light, siliceous slag	FP2000
GER 002	G12	grid	8.7	4	metallurgical slag	FP2000
GER 002	G15	grid	10.4	1	metallurgical slag	FP2000
GER 002	G15	grid	1.1	1	metallurgical slag	FP2000
GER 002	G15	grid	0.5	3	charcoal	FP2000
GER 002	G16	grid	4.9	2	Cu-alloy (SF149)	FP2000
GER 002	G17	grid	31.9	1	metallurgical slag	FP2000
GER 002	G17	grid	5.8	1	light siliceous slag	FP2000
GER 002	G17	grid	90.6	1	hearth bottom	FP2000
GER 002	G18	grid	3.0	1	light, siliceous slag	FP2000
GER 002	G19	grid	82.3	6	metallurgical slag	FP2000
GER 002	G19	grid	5.0	1	iron	FP2000
GER 002	G19	grid	0.6	1	slag spheroid	FP2000
GER 002	G22	grid	2.4	1	metallurgical slag	FP2000
GER 002	no. 1	grab	1450.0	large frags	vitrified sand/ash	FP2001
GER 002	no. 2	grab	525.0	large frags	vitrified sand/ash	FP2001
GER 002	no. 20	excav.	2900.0	1	hearth lining	FP2001
GER 002	no. 20	excav.	114.1	several	fused ashy hearth fill	FP2001
GER 002	no. 20	excav.	13.4	2	slag	FP2001
GER 002	no. 20	excav.	7.7	1	Cu-alloy	FP2001
GER 002	no. 27	grab	0.4	2	slag prills	FP2001
GER 002	no. 35	grab	19.3	1	crucible fragment	FP2001
GER 002	no. 48	grab	9.8	1	crucible fragment	FP2001
GER 002	no. 74	grab	357.3	many frags	gypsum	FP2001
GER 002	no. 75	grab	223.5	many frags	gypsum	FP2001
GER 011	TR952	grid	27.0	1	metallurgical slag	FP1999
GER 011	TR959	grid	115.2	1	red/ox-fired clay/mud	FP1999
GER 016	TR815	grid	30.5	1	metallurgical slag (SF1101)	FP1998

Site no.	Area/Grid	method	wt (g)	no. frags	type	Season
GER 016	TR906	grid	0.9	1	metallurgical slag?	FP1999
GER 016	TR907	grid	10.1	1	metallurgical slag?	FP1999
GER 016	TR907	grid	0.5	1	copper alloy stick with ?head	FP1999
GER 016	TR909	grid	80.6	2	metallurgical slag	FP1999
GER 016	TR909	grid	29.5	1	reduced-fired clay/mud	FP1999
GER 016	TR910	grid			metallurgical slag	FP1999
GER 016	TR911	grid	6.8	1	metallurgical slag	FP1999
GER 016	TR911	grid	143.1	1	hearth bottom	FP1999
GER 016	TR911	grid	4.6	1	reduced-fired clay/mud	FP1999
GER 016	TR911	grid	185.8	2	metallurgical slag	FP1999
GER 016	TR912	grid	6.2	1	molten metallurgical slag	FP1999
GER 016	TR912	grid	35.8	1	metallurgical slag	FP1999
GER 016	TR943	grid	10.9	1	palm ash slag	FP1999
TAG 020		grab	101.8	2	hearth bottom and slag prill	FP2000
TWE 028		excav.	252.4	many frags	compacted ash, soil and sand	FP1999
TWE 028		grab	131.7	16	palm ash slag	FP1999
TWE 028		grab	33.7	1	partly vitrified furnace/hearth lining	FP1999
TWE 028		grab	16.5	2	badly corroded pottery? lining?	FP1999
TWE 028		grab	10.1	1	molten metallurgical slag	FP1999
TWE 028	TR1000	grid	19.5	1	metallurgical slag	FP1999
TWE 028		grab	124.9	20	palm ash slag	FP2001
TWE 028N		grab	4475.0	1	block of fused sand	FP2001
TWE 028N		grab	95.2	2	fused sand/soil	FP2001
TWE 028N		grab	44.3	1	metallurgical slag	FP2001
TWE 029		grab	237.4	several frags	fused sand/ash	FP2001
TWE 029		grab	153.7	several frags	heat affected sand/compacted ash	FP2001
TWE 029		grab	21.4	1	metallurgical slag	FP2001
TWE 029		grab	14.6	3	fused sand/ash	FP2001

SECTION 44. FAZZĀN PROJECT SURVEY SMALL FINDS REPORT

By F. Cole, B. Hoffmann, H. Parton, E. Sauer and D. J. Mattingly

INTRODUCTION

By D. J. Mattingly

The following abbreviations are used in this catalogue.

Dimensions	
L	Length
W	Width
T	Thickness
D	Diameter
H	Height
DP	Depth
Ext.	Exterior
Int.	Interior
Max.	Maximum
Min.	Minimum
S1	Side 1
S2	Side 2
Appx	Approximately

All dimensions are given in mm, apart from the querns and other large stone items, where cm are used (though bead grinders included after beads are measured in mm).

The first line of most catalogue entries summarises the context information in the following manner:

Site no (Grid/area) Description. SF no.
GER 002 (G02) Fibula. SF 1243

The artefacts are discussed and catalogued in the following order:

Coins
Metal artefacts (silver alloy, copper alloy, other alloys, iron)
Beads (faience, glass, ostrich eggshell, carnelian, amazonite, other stone)
Bead grinders
Other artefacts (leather, paper, ceramic)
Vessel glass
Glass objects (bangles, pins)
Stone

Most of the finds reported have been collected by the FP survey from 1997-2001, but in certain cases it has been possible to have material collected by Charles Daniels studied and incorporated as separate sub-sections in the catalogue (entries for glass beads, vessel glass and glass objects). Authorship of individual sections is made clear at the appropriate place within the report. The last named author has acted as overall collator and editor, imposing as far as possible a consistent standard and format of presentation on the material.

THE COINS

By E. Sauer

A total of only 12 Roman, or probably Roman, coins has been recovered in the current survey and excavation work. Since intensive sieving was carried out of all excavated deposits and earlier excavations also yielded very few numismatic finds**,** it appears that the Garamantes were not major users of coins. No coins have been found in Garamantian burials and the CMD archive contains references to only seven coins, of which six appear to have been modern and the other is unidentified. The excavations of Ayoub at Jarma, conducted on a very large scale, yielded an unspecified (but probably low) number of poorly preserved specimens, apparently including a 4th-century 'small brass coin' of (probably) Constantius II (Ayoub 1967a, 29, no.3d). The discovery by the Fazzān Project of six *denarii*, including one plated piece, is by no means unremarkable considering that prior to the publication of a hoard of 31 *denarii* from Sabratha only four *denarii* (of Augustus, Hadrian, the 2nd century and one illegible piece) had been published from the whole of Tripolitania and that Severan coinage is generally rare in this area according to Rosalia Macaluso (1995, 77). The coins recovered from survey and excavation probably form just a small proportion of the pieces originally in the possession of the Garamantes. The pieces attest that Roman transactions with the Garamantes involved some payments in coin in the 3rd and 4th century, though since the latter do not seem to have had a coin-based economy, many may have been recycled for the metal content. In this respect it is interesting that no less than 9 out of the 12 coins were found during survey of Sāniat Jibrīl (GER 002), in close proximity to numerous metallurgical hearths and in an area of proven iron and copper alloy working. The other three came from the neighbouring Garamantian capital at Garama (Old Jarma, GER 001), one a surface find, the other two recovered in the excavations at site G1.

Although several of these *denarii* were recovered from the same site (GER 002) during survey work, they were quite widely distributed there (the three examples recovered by grid survey fell within a rectangle 125 x 75m). It thus seems unlikely that the concentration at GER 002 was due to a single hoard that had become exposed at the surface. Nonetheless, nos 3, 4 and 6 in the table below (SF nos. 1452-54) could all have circulated contemporaneously, and the same site has yielded a further coin of Elagabalus. It is hard to assess how long the ancient *denarius* forgery of Trajan had been in circulation before it was lost. The lettering is still

quite sharp, but the obverse portrait shows clear signs of circulation: it could have been lost any time between the second quarter of the 2nd century and the mid-3rd century. A *denarius* of Trajan and even *denarii* of Vespasian still form part of the above-mentioned hoard of *denarii* deposited after AD 202 or 205/6 at Sabratha (Macaluso 1995). A forgery may well have circulated for a shorter period than the average original, but we do not know how long after the original it has been produced.

Late antique coinage is far less well represented, especially if one takes into account the metal value: the late antique coins had less than one percent of the value of the high imperial coins. (The metal value ratio between silver and copper was 125:1 in the late 4th century, Pankiewiecz 1989, 96; 98; 121 tab. 3; *Cod. Theod.* 11, 21, 2). It seems that monetary transactions reached their peak in the first half of the 3rd century. It is hard to assess how distinctive this peak was; the small number of finds raises the possibility that new discoveries may alter the statistics. Considering that the *denarius* of Septimius Severus was in mint condition when lost, it seems likely that it reached *Garama* earlier than the *denarii* of Elagabalus and that the Severan coins were imported over a period of time rather than reaching *Garama* all at once. The 4th-century coins were brought to *Garama* long after the high imperial *denarii* had disappeared from circulation and are thus evidence for continued or renewed monetary transactions between Roman traders and the Garamantes in the mid 3rd of the 4th century. Garraffo (1996, 181-2) does not rule out the possibility that the barbarous radiates were minted or reached Tripolitania in the later 3rd century. However, he regards it as more likely that these imitations, including some blanks, were minted as late as the mid 4th century. If so, no. 9 (SF no 2085), which is a fragment of a barbarous radiate or a part of a late 4th-century Æ4 copy, is unlikely to have reached *Garama* before the second half of the 4th century.

Acknowledgements

I would like to thank Dr Graham Morgan for the conservation of some coins and Dr Cathy King for checking the identification of a few pieces.

Table 44. 1. Coin list from the Fazzān Project. Note: all weights were measured prior to research cleaning as corrosion products tend to contain some of the original metal.

Cat. No.	Site no.	Grid/Site (Context)	Weight	Type	Date	Emperor	Comments	SF no.
1.	GER 002	Grab	3.477 g	forged *denarius*	112-117 (prototype)	Trajan	Æ core of plated *denarius* of Trajan: RIC 244 or 245 (date of prototype of ancient forgery)	2132
2.	GER 001	Site G1 (919)	3.540 g	*denarius*	198-202	Septimius Severus	RIC 135(b) or 510(b) variant: *denarius* with head laur. r.; according to BMC nos. 669-70; *cf.* p. 177 eastern mint/ Laodicea; in mint condition	919
3.	GER 002	G14	2.078 g	*denarius*	210-213	Caracalla	Caracalla as *[---]AVG BRIT.* rev.: unidentified fig. seat. l.	1453
4.	GER 002	G19	1.595 g	*denarius*	213-214	Caracalla	RIC 302; *cf.* Kienast 1990, 164 for proposed dating	1452
5.	GER 002	Grab	1.796 g	*denarius*	218-222	Elagabalus	-	2037
6.	GER 002	G17	1.061 g	*denarius*	219-220	Elagabalus	RIC 141 or 142.	1454
7.	GER 001	001 area	1.889 g	*'follis'*	330-341	-	Constantinopolis, mint mark not preserved	2183
8.	GER 002	G06	1.400 g	*'follis'*	335-337	Delmatius (or Constantius?)	as Caesar; *gloria exercitus*, one standard	2087
9.	GER 002	G18	0.129 g	Æ 4 (half)	mid/late 4th c. (or later 3rd c.)	?	[regular half; possibly deliberate division] barbarous radiate or late antique imitation	2085
10.	GER 002	G10	0.601 g	Æ 1/2 (quarter)	?	?	[looks like deliberate division; orig. diam. *c.*24 mm, thin flan points to 3rd-4th c.]	1180
11.	GER 001	Site G1 (637)	1.565 g	Æ 3/4	?	?	[*c.*16.5 mm diam., very thick flan; not a typical Roman coin.]	637
12.	GER 002	Grid 002	-	uncertain	?	?	Illegible, 2 fragments of very poorly preserved flan of probably AR/ Æ	1002

SILVER ALLOY, COPPER ALLOY AND OTHER METAL ARTEFACTS

By F. Cole

There is one possibly silver alloy artefact: SF 2062 from TWE 027. The majority of copper alloy objects were recovered from GER 002, including some jewellery items; 2 fragmentary finger-rings, and a number of other rings or earrings (Figs 44.1-44.2). The state of preservation tended to be poor, due to the high salinity of the sand in the area, and many pieces were completely remineralised. The largest group of finds were the fragments; these tended to be fragments of copper alloy sheet, usually of less than 12mm Lmax. Also present were a large number of pierced sheets (Fig. 44.3) – some being fragments of rivet plate, the purpose of which is unknown. These are beginning to resemble the finds from the lower levels of GER 001 where numbers of rivet plates are also being recovered. There is a possibility that these metal fragments were cullet collections – scrap for remelting. Small scale jewellery production can be very efficient, with all offcuts, flashing and miscast items returned to the crucible for reuse, leaving little trace archaeologically.

The paucity of iron recovered is possibly indicative of its lesser use in the region, but is more likely to be the result of poor preservation. Iron is particularly vulnerable to highly saline environments – chlorides in particular, and corrosion in aggressive environments causes the object to collapse into flakes, which then dissociate, leaving the object unrecognisable. The good state of preservation demonstrated by the spur (Fig. 44.4) suggests it belongs to a more recent period: possibly Italian or Ottoman.

Metal Jewellery and Decorative Items

TWE 027 Bangle? SF 2062
L max. 39 W max. 23 T max. 3 band W 9 Fragment. Whitish metal – Ag alloy? Ends broken. Raised band running along centre parallel to both edges. **[Fig. 44.2a].**
GER 016 (925) Bangle? SF 1466
L max. 58 W max. 15 T max. 5. Fragment. Cu alloy. Strap, ends broken. Incised decoration of chased parallel lines along upper surface. **[Fig. 44.2b].**
GER 002 (grab) Bead. Spherical. SF 2134
D max. 6 H max. 5. Complete. Cu alloy. **[Fig. 44.2e].**
GER 002 (grab) Bead/Washer. SF 2136
D max. 5.5 T max. 1 Perforation 2. Complete? Cu alloy. Coiled wire hammered flat into a disc. **[Fig. 44.2f].**
GER 002 (grab) Horse Fitting. SF 2121
L max. 32 plate T 1 pin W max. 4. 60%. Cu alloy. Large disc with square cross-section pin stub. Decorated with two incised concentric circles; one around the centre, one around the edge. **[Fig. 44.2c].**

Figure 44.1. Copper alloy fibula SF 1243, with (below left) finger ring SF 2113 and (right) finger ring SF 2147.

GER 002 (G04) Disc Fragment. SF 1280
Fragmentary. No recorded dimensions.
GER 002 (G21) Disc? SF 1378
L max. 17 T max. 4. Cu alloy. Possibly cut from disc. One curved edge, with shallow groove running parallel to edge on upper face.
GER 002 (G20) Fragment. SF 1360
L max. 19 T max. 2.5. Cu alloy. Curved edge, lower face very smooth. Disc blank?
GER 002 (G10) Earring? SF 1139
Incomplete, no recorded dimensions. Cu alloy loop. One end bent, and tapers to a rounded point. Shaft possibly beaded.
GER 002 (grab) Earring. SF 2158
D max. 18 shaft D max. 3 min. 2. Complete. Cu alloy. Beaded open ended loop. Circular cross section. **[Fig. 44.2d].**
GER 002 (G01) Fibula clasp? SF 1117
L max. 10.5 W max. 5 T max. 2. Fragment. Folded, heavily corroded. One edge broken.
GER 002 (G02) Fibula. SF 1243
L max. 40 W max. 6 D min. 3. 50%. Cu alloy. Pin and spring missing. Back cast with three pairs of parallel ridges. Clasp has chased decoration of offset parallel diagonal lines. **[Figs 44.1, 44.2g].**
GER 002 (grab) Finger Ring? SF 2430
L max. 13 D max. 2 min. 1. Fragment. Cu alloy. Convex beaded shaft.
GER 002 (grab) Finger Ring. SF 2147
L max. 18.5 W. max. 8 T max. 2. Fragment. Cu alloy. Bezel and shoulders intact. Bezel circular, opaque blue and turquoise inset in rubover setting. Shoulders decorated narrowing to a semi-circular ridge, then tapers into the shaft. **[Figs 44.1, 44.2h].**
GER 002 (grab) Finger Ring. SF 2113
L max. 17 W min. 8 T max. 3. Fragment. Cu alloy. Bezel and shoulders intact. Bezel oval, clear yellow glass inset in rubover setting. **[Figs 44.1, 44.2i].**
GER 002 (005) Finger Ring? SF 1006
L max. 15 D max. 1.5. Appx. 30%. Cu alloy. Cast. Convex, interior smooth, exterior ribbed with horizontal parallel lines.

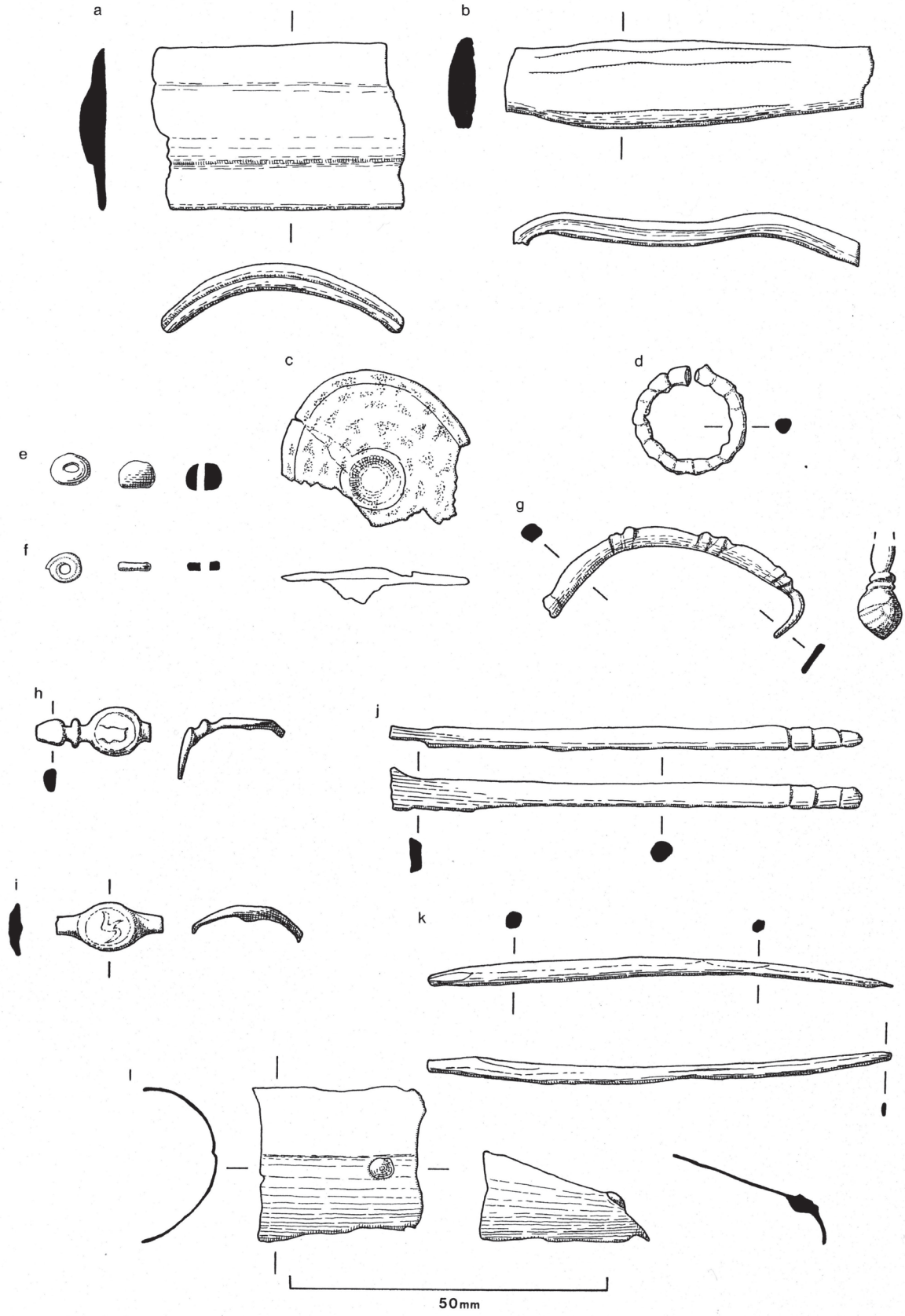


Figure 44.2. Copper alloy artefacts from the FP survey.

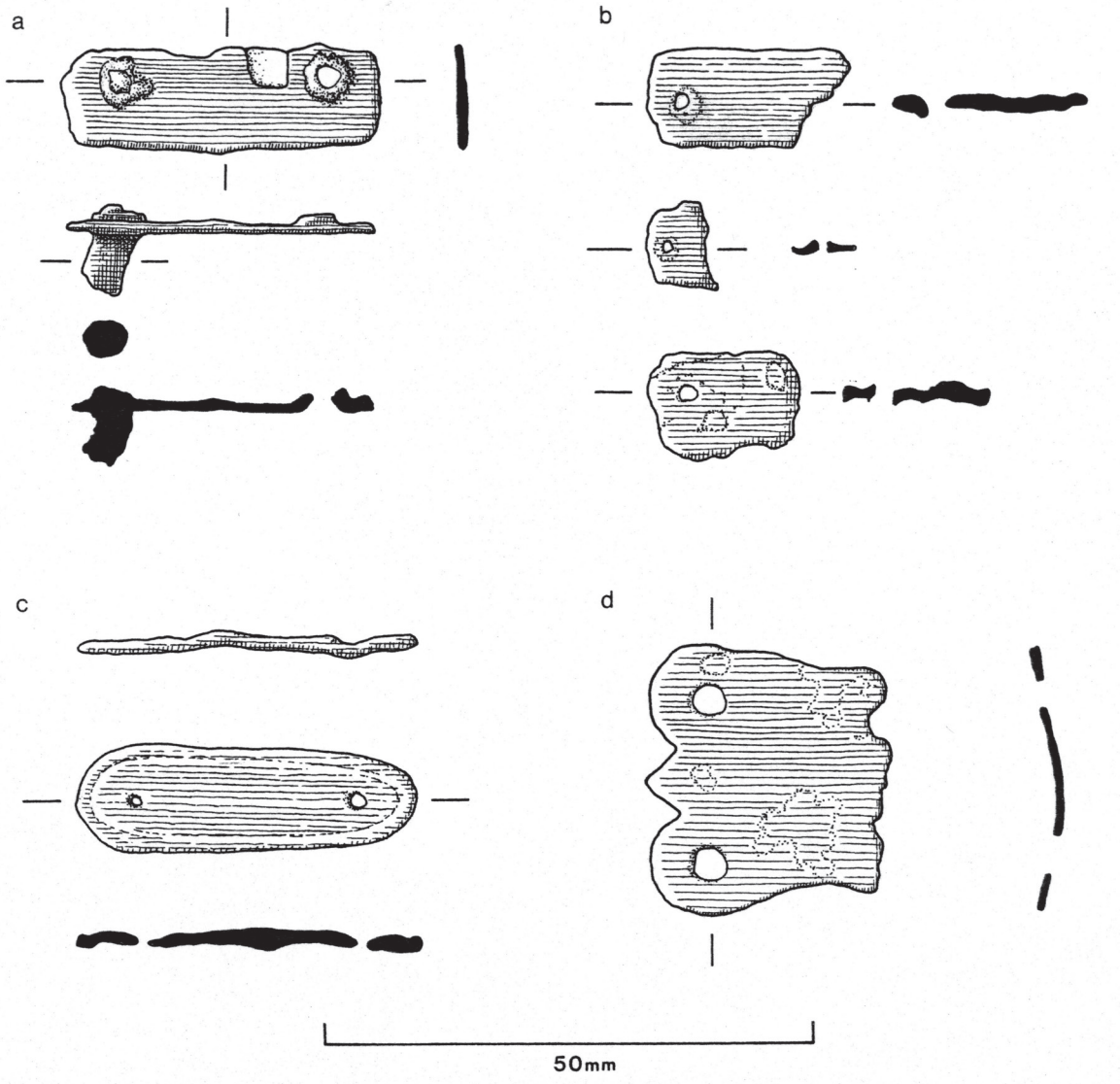


Figure 44.3. Copper alloy and iron rivet plates from FP survey.

GER 002 (G02) Finger Ring? SF 1290
L max. 6 D max. 2 min. 1.5. Fragment. Cu alloy. Curved and beaded.
GER 002 (G16) Nail. SF 1456
L max. 12 W max. 10 Shaft D 4. 60%. Cu alloy. Thick wire. One end tapers, one end bent over and hammered into flat head.
GER 002 (G07) Nail or rivet. SF 1110
L max. 7 D max. 3.5 min. 1.5. Fragment. Cu alloy. Head hexagonal, flat, slight lip. Shaft circular section tapering to square section.
GER 001 (G1) Pin. SF 2090
L max. 62 W max. 4 T max. 3. Fragment. Cu alloy. One end broken. Shaft curves slightly, tapers to a point. Formed from a rolled sheet. Semi-circular grooves run along the inside of the curve, possible tool marking.
GER 002 (G04) Pin. SF 1221
L max. 75 W max. 7 shaft D 4. Cu alloy. Shaft, circular section. One end bilaterally flattened. One end rounded. Decorated with three incised rings. **[Fig. 44.2j].**
GER 002 (grab) Pin? SF 2133
L max. 73 D max. 3. Fragment. Cu alloy. One end intact. Shaft tapered, slightly faceted, hammered and drawn to shape. Possible fibula pin. **[Fig. 44.2k].**
GER 002 (G09) Pin? SF 1209
L max. 17 W max. 4 T max. 1. Fragment. Cu alloy. Heavily corroded. Tip broken. Buckle pin?
GER 004 Sheet with decoration. SF 2442
L max. 18 W max. 14 T max. 1.5 T of sheet <0.5. Complete. Folded rectangular. Repoussée design of dots.

Other Copper Alloy Fragments

CHA 002 (grab) Rivet Plate. SF 2080
L max. 31.5 W max. 11 T plate 1 T max. 10. 95%. Cu alloy. Sub rectangular. Two perforations one with an iron rivet *in situ*. **[Fig. 44.3a].**
CHA 026/027 (1019) Handle Attachment? SF 2089
L max. 26 W max. 23 H max. 13 Incomplete. Cu alloy. Half cylinder tapering to blunt fold. One perforation with an iron nail *in situ*. **[Fig. 44.2l].**
GER 002 (grab) Rivet plate. SF 2145
L max. 35 W max. 11 T max. 2. Complete. Cu alloy. Rounded rectangle. Ends pierced. Shallow groove around the edge of the upper face. **[Fig. 44.3c].**
GER 002 (grab) Rivet plates. SF 2135
(i) L max. 21 W max. 11 T max. 3. (ii) L max. 7 W max. 9 T max. 2. (iii) L max. 15 W max. 1.2 T max. 3. **[Fig. 44.3b].**
GER 002 (002) 2 Plates. SF 1002
Both Cu alloy. (i) Bent plate. (ii) L 26 W 9. Flat plate with ends pinched in to form a tube.
GER 002 (G03) Rivet plate and ingot? SF 1165
(i) L max. 11 W max. 9 T max. 1. Cu alloy. Rectangular with rivet hole.
(ii) L max. 21 W max. 9 T max. 7. Cu alloy. Bar one end broken. Ingot?
GER 002 (G05) Rivet plates. SF 1191
All Cu alloy plate and strip. Two pierced rivet plates; (i) L max. 13 T max. 2 D Perforation 3 (ii) L max. 2 T max. 2 Plate T 1
GER 002 (G05) 4 Rivet plates. SF 1123
All Cu alloy. One not catalogued. (i) L max. 7 T max. 2 Rivet plate with perforation section. (ii) L max. 9 D max. 1.5 Curved wire circular section. Finger ring? (iii) Wire rectangular section.
GER 002 (G16) Rivet plate. SF 1368
L max. 12 T max. 1.5. Cu alloy. One edge curved. Section of perforation. Rivet plate?
GER 002 (G18) Rivet plate. SF 1439
L max. 13 W max. 11 T max. 1. Cu alloy plate. Pierced for rivet. Edges broken.
GER 002 (grab) Rivet plates. SF 2066
Cu alloy plate, with rivet holes. (i) L max. 14 T max. 2 (ii) L max. 11 W max. 6 T max. 1.5

Other Undiagnostic Copper Alloy Fragments

CHA 024 1 fragment; GER 001 (grab) 1 fragment; GER 001.064 2 fragments; GER 001.063 1 fragment; GER 002 (grab) 69 fragments; GER 002 (010) 1 fragment; GER 002 (G01) 7 fragments; GER 002 (G02) 4 fragments; GER 002 (G03) 4 fragments; GER 002 (G04) 2 fragments; GER 002 (G05) 8 fragments; GER 002 (G06) 1 fragment; GER 002 (G07) 6 fragments; GER 002 (G08) 4 fragments; GER 002 (G09) 4 fragments; GER 002 (G10) 12 fragment; GER 002 (G11) 4 fragments; GER 002 (G12) 2 fragments; GER 002 (G13) 1 fragment; GER 002 (G14) 2 fragments; GER 002 (G15) 1 fragment; GER 002 (G16) 10 fragments; GER 002 (G17) 2 fragments; GER 002 (G18) 2 fragments; GER 002 (G19) 4 fragments; GER 002 (G20) 1 fragment; GER 010 1 fragment; GER 016 (904) fragment; GER 016 (909) 2 fragments; GER 016 (910) fragment; GER 016 (912) 3 fragments; GER 016 (914) 1 fragment; GER 027 (1006) 2 fragments; ZUL 010 2 fragments

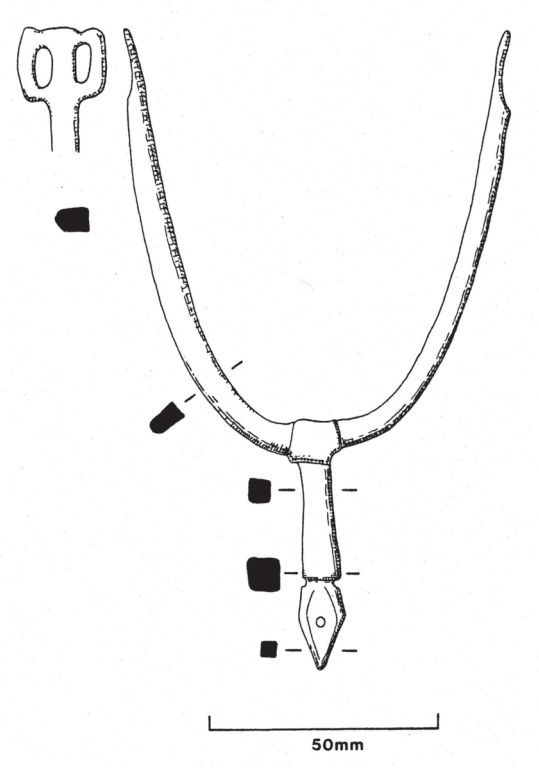


Figure 44.4. Iron spur SF 2105 from ITF 12.

Other Metal Alloy Artefacts

Both alloys of indeterminate whitish metal, possibly modern.
GER 016 (929) Bracelet? SF 1462
L max. 25 W max. 9 T max. 7. Incomplete. Whitish metal. Curved with ovoid cross section.
GER 018 (966) Strip. SF 1470
L max. 42 W max. 2 T max. 1.5 Incomplete. Whitish metal. Stamped design of linked hexagons surrounded by two rows of milling with dots in semicircles along each edge.

Iron Artefacts

CHA 024 Several fragments. SF 2119
CHA 024 Several fragments. SF 2120
GER 002 (grab) 10 flakes. SF 2141
GER 016 931 Cylinder. SF 1459
L max. 58 D max. 11 internal D 5. Incomplete. Two joining and one non-joining fragments. Sheet metal rolled into a cylinder. One end intact with a raised ridge.

GER 016 (953) Rivet-plate. SF 1501
L max. 24 W max. 28 T 1. Appx. 50%. Butterfly shaped. Corners pierced. Section through two holes in break edge. **[Fig. 44.3d].**
ITF 012 Spur. SF 2105
L max. 142 W max. 83 buckles (x 2) T 19, 18 spur L max. 55 T max. 9. Complete. Cast in two parts, probably welded together. Frame arms end in buckles. Spur square in cross section. Head diamond shaped, with a circular indentation on each face. Head is separated from the shaft by a cast groove. **[Fig. 44.4].**

BEADS

By F. Cole (with a section on beads from the Daniels' survey by B. Hoffmann)

Within the catalogue the beads have been divided into type by shape – see illustrations (Figs 44.5-44.8). In most cases the distinction is clear. However, to prevent confusion, a disc bead is defined as having a wall thickness greater than the Hmax, and for the tubular beads the Hmax is greater than the wall thickness. The term doughnut has been used to describe beads having either a circular wall section or a d-shaped wall section. The term spherical is usually applied as an approximation: the nature of handmade beads, particularly when they are as small (as many of these are) is to have some degree of natural variation. The same can be said of the 'clipped' tubular beads, which are formed as a long cylinder and then cut down leaving rims and flashing attached to the surface.

The catalogue is also arranged by material type in the following order: faience, glass, ostrich eggshell, other shell, carnelian, amazonite and other stone. The term **faience** is used here to describe beads made from glass paste, rather than the thick-glazed earthenware which also goes by this name. Faience items of this type are usually made in a mould – in particular the striated beads. No moulds have been recovered from GER 002, although the production process is fairly simple, so it is possible these beads were being made elsewhere.

Glass beads are common finds, produced in a variety of forms. There is a possibility that some of these beads were produced locally. Glass and faience beads were first commonly available in North Africa during the Hellenistic period, when traders brought beads along the Mediterranean coastline from Alexandria, the main beadmaking centre of the time. 'Eye beads' made in the Phoenician style with layered glass, and mosaic glass beads were popular exports, and were probably also produced in Carthage (Munan, 2005) Beads of this type are known at Zinkekrā (Daniels 1968, 121, 149) and have also been excavated from Jarma.

Indo-Pacific drawn glass beads first arrived in Africa from Sri Lanka via the Red sea port of Berenike (Egypt) in the 4th century AD. These were transported north along the Nile, to Alexandria to join the Mediterranean coastal trade (Francis 2002).

It is thought that the first trans-Saharan trade began in the early Islamic period, around the time when the beadmaking centre transferred to Fustat (Old Cairo) between the 7th and 10th centuries AD.

Large quantities of **ostrich eggshell** were recovered, both unworked and in various stages of bead production. Shells were broken into fragments then perforated, usually from the interior, the perforation was then finished from the exterior as this minimised spalling or flaking of the surface (for similar observations on material from Wādī Tanezzūft, see Cristiani and Lemorini 2002, 209-14). Once perforated the fragment was chipped into a roughly circular shape and ground down using a bead grinder (see below). On worked pieces where the natural curvature has been ground down, the interior surface can be identified by its granular texture, while the exterior is very fine, with no visible grain. SF 1241, from GER 002, was burned producing a black, polished sheen on the exterior surface and a dark grey interior. Other finds from the excavation at GER 001 suggest that the burning may be an intentional decorative feature. The majority of pieces are a pale cream colour, however natural variance produces shades from off-white to a deep ginger brown. Beads found at earlier settlement sites tend to be larger, and to have a much larger perforation diameter than those from Garamantian sites. A large enough number were recovered from GER 002 to demonstrate that these were being made into several distinct styles.

The large quantities of **carnelian** recovered, particularly from GER 002 demonstrate the importance of the material to the region, and the extent to which it was worked (Fig 44.8-44.9). The majority of flakes and chips recovered have no retouched or damaged surfaces suggesting they were discarded residues from working; either into lithics or, more likely, into beads. All the carnelian beads recovered from GER 002 are unfinished or have a natural flaw in the stone, again suggesting they have been discarded within an industrial area rather than lost. The flakes described as 'orange' in the catalogue are probably the same stone, but with a different colour and shade density. The Garamantes favoured reds, and many of the flakes were of lower quality or flawed stone with more colour variation. The exact source of the carnelian exploited by the Garamantes is unknown, but geologists suggest a likely correlation with the volcanic and metamorphic rock formations of NE and E Fazzān (Lefranc 1986, 309-10). The Roman sources mention 'Garamantian carbuncles' (also referred to as 'Carthaginian stones') suggesting trade from an early date (Strabo 17.3.11, 17.3.19; Pliny *NH*, 37,92). Good quality carnelian may have been exported to the Mediterranean world for use in ring intaglios. However, there is nothing in our finds assemblage to suggest that the Garamantes were

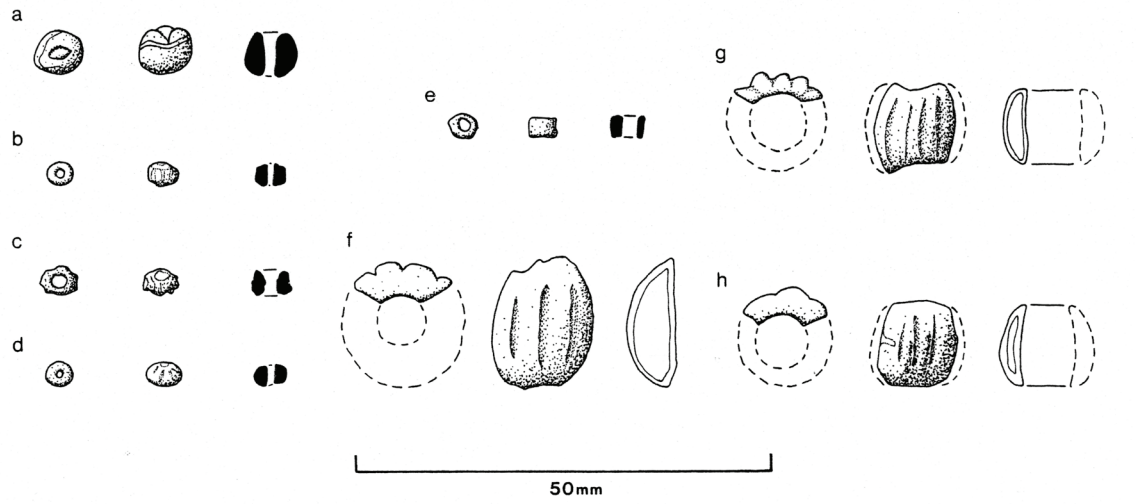


Figure 44.5. Faience beads from the FP survey.

preparing blank ring stones, let alone engraving them. Most of the carnelian working in Fazzān seems to have concerned bead manufacture. Italian analysis of Garamantian era beads suggests the metal bits used with bow drills (Cristiani and Lemorini 2002, 203-09, 214-15. On carnelian bead working in W Sahara and sub-Saharan W Africa, see Calegari 1993b; Gaussen 1993). The raw materials have also been found in large quantity in the excavations at Jarma (GER 001, site G1).

A semi-precious turquoise green opaque stone, commonly known as **Amazonite**, is another source of material for stone beads and pendants. Finds of finished beads from Garamantian burials show that the material was exploited in antiquity and the presence of unfinished beads and waste flakes and chips on a number of Garamantian settlements (such as GER 002) demonstrates that the raw materials were being imported to the Wādī al-Ajāl and worked there (as with the carnelian). The source of the amazonite was almost certainly Eghei Zuma in N Tibesti, first identified by Monod (1974; 1984), and now subject to detailed geological investigation (de Michele and Piacenza 1999, who have identified samples of our material with the source).

Faience Beads

GER 002 (grab) Bead. Tubular. SF 2428
D max. 4.5 H 2.5 Perforation 1.5-2. Complete. Pale turquoise. Pierced off-centre.
GER 002 (005) Bead. Striated Melon. SF 1568
H max. 8 T max. 4 min. 3 Perforation D appx. 5. Appx. 20%. Blue.
GER 002 (G02) Bead. Disc. SF 1187
D 4.5 H 1.5-2 Perforation D 2. Complete. Turquoise. Surface very gritty.
GER 002 (G04) Bead. Cylindrical. SF 1274
D max. 4 H 2 Perforation D 2. Complete. Turquoise. Squashed in manufacture. No glaze.
GER 002 (G02) 4 Beads. SF 1240
(i) D 6 H 6 Perforation D 2. Complete. Spherical. Dark red marvered white paste line around upper area, with dragging crease **[Fig. 44.5a]**; (ii) D 4 H 3 Perforation D 1. Complete. Doughnut. Dark red with some black banding along the grain **[Fig. 44.5b]**; (iii) D max. 4.5 H max. 3 Perforation D 2. 80%. Cylinder. Dark red. Very eroded **[Fig. 44.5c]**; (iv) D 4 H 3 Perforation D 1. Complete. Doughnut. Dark red **[Fig. 44.5d]**.
GER 002 (G03) Bead. Disc. SF 1136
D max. 4 H max. 2 Perforation D 2. Complete. Turquoise. Fine grain.
GER 002 (G03) Bead. SF 1306
D max. 4 H 2 Perforation D 2. Complete. Disc. Turquoise.
GER 002 (G03) Bead. SF 1314
D 4 H 2 Perforation D 2. Complete. Disc. Turquoise. Reconstructed.
GER 002 (G05) Bead. Disc. SF 1121
D 3 H 15 Perforation D 15 complete. Turquoise. Surface roughened.
GER 002 (G07) 2 Beads. Tubular. SF 1302
D max. 3.5 H max. 2.5 Perforation D 2, D max. 4.5 H 2 Perforation 2. Complete. Turquoise. **[Fig. 44.5e].**
GER 002 (G09) Bead. Disc. SF 1213
D 5 H 1.5 Perforation D 2.5. Complete. Turquoise, surface roughened.
GER 002 (G10) Bead. Spherical. Striated. SF 1168
H 11.6 W max. 12. 30%. White. Moulded vertical lines on exterior. **[Fig. 44.5f].**
GER 002 (grab) 2 Beads. SF 2073
(i) L max. 9 H max. 10 T max. 4. Appx. 35%. Turquoise on white core **[Fig. 44.5h]**; (ii) L max. 14 T max. 12. Three fused fragments. Opaque, cobalt blue. Beads?

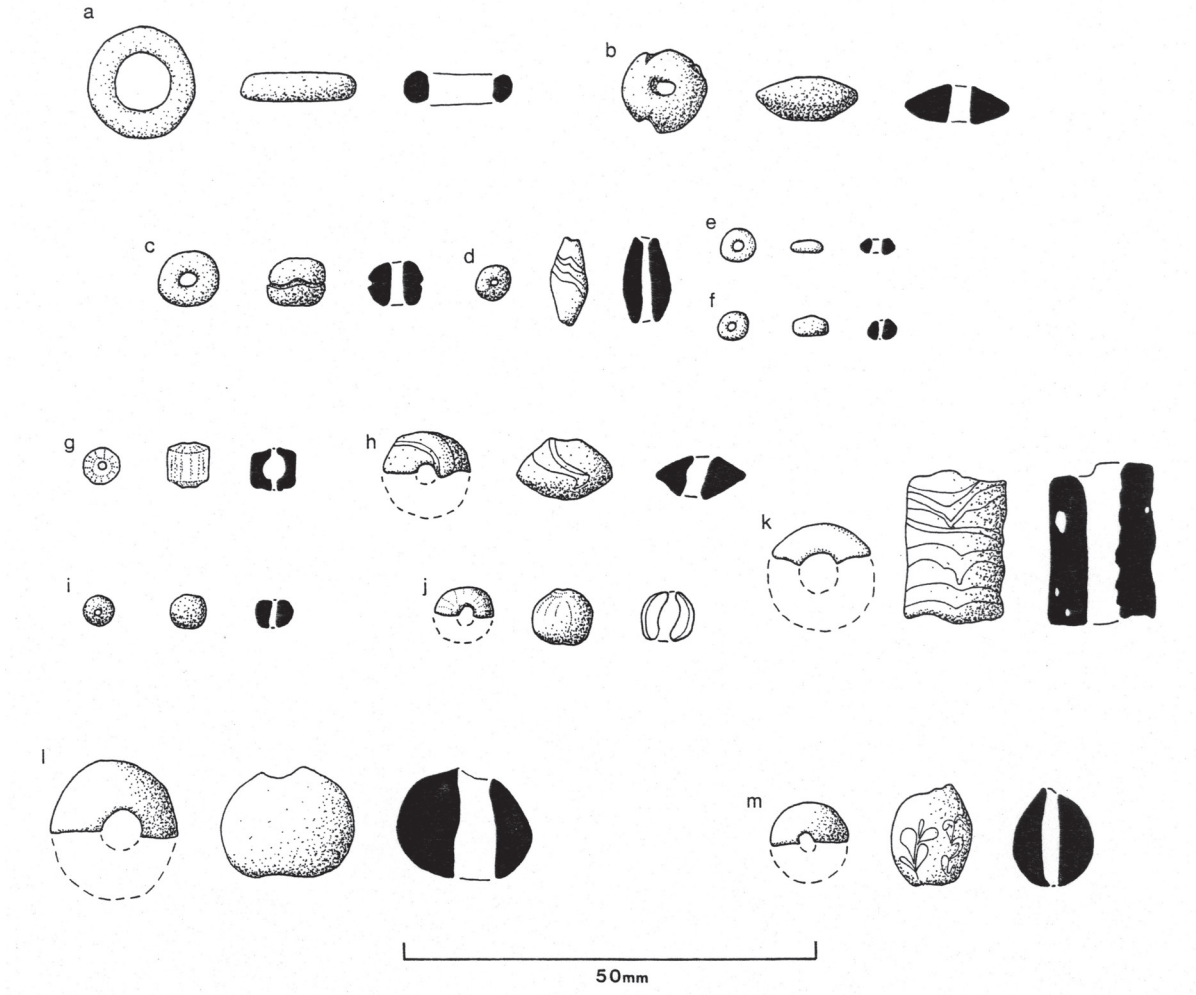


Figure 44.6. Glass beads from the FP survey.

GER 016 (909) Bead. Spherical. Striated. SF 1480
H max. 11 W max. 10 T wall max. 4. Appx. 30%. Turquoise green. Surface pitted, mottled white. **[Fig. 44.5g].**

Glass Beads

CHA 024 Bead. Doughnut. SF 2117
D max. 14 H max. 3 Perforation D min. 8 Complete. Cobalt blue, clear. **[Fig. 44.6a].**
GER 001 (SW of G1 - grab) Bead. Faceted ovoid. SF 2184
H max. 8 W max. 7 T max. 3 Perforation D max. 2. 40%. Opaque turquoise. Hexagonal cross section at circumference.
GER 001 (wall .009) Bead. Spherical. SF 2421
D max. 10.5 H max. 10 Perforation D 2. Complete. Opaque white marvered with black borderlines and pink and white flowers and turquoise leaves. Surface pitted, eroded.
GER 002 (grab) Bead. SF 2116
L max. 5 W max. 2 T max. 2.5. Appx. 15%. Multi-layered. Core yellow/green, exterior deep turquoise, thin layer of yellow paste between.
GER 002 (grab) 2 Beads. SF 2137
(i) D max. 6 H max. 4.5 Perforation max. 2. Appx. 80%. Tubular, bilateral flattening. Pale green.
(ii) D max. 3 H max. 3 Perforation D 1. Complete. Spherical. Pale yellow.
GER 002 (grab) 4 Beads. SF 2128
(i) D 8 H max. 5.5 Perforation D 2. Complete. Spherical, flattened top and bottom. Grey/green; (ii) D 5 H 4 Perforation 1. Complete. Tubular. Turquoise. Surface very eroded; (iii) L max. 8 H max. 3. Appx. 25%. Doughnut. Cobalt blue. Large perforation; (iv) W max. 4 H max. 4. Appx. 30%. Cylindrical, rounded ends. Cobalt blue. Surface pitted.
GER 002 (002) Bead. Biconical. SF 1035
D max. 11.5 H max. 5 Perforation D 25. 90%. Cobalt blue. Surface pitted. Internal splitting. **[Fig. 44.6b].**
GER 002 (029) Bead. Spherical. SF 1025
D 7 H 7 Perforation D 1. 75%. Cobalt blue. Probably moulded. Surface pitted.
GER 002 (G01) 2 Beads. Doughnut. SF 1115
(i) D max. 4.5 H 3.5 Perforation D 1. Complete. Emerald green; (ii) D max. 4.5 H 3 Perforation 1.5 Complete.

Turquoise with one fine colourless band running from top to bottom.

GER 002 (G02) Bead? Biconical. SF 1287
L max. 5 W max. 4. Fragment. Two-tone, lime green marvered with lemon yellow paste.

GER 002 (G02) 3 Beads. SF 1129
(i) D 7 H max. 6.5 Perforation D 1.5. Complete. Spherical. Navy blue marvered with white paste along widest point; (ii) D 7 H 1.5 Perforation D 2 Complete. Doughnut. Cobalt blue with one white fleck; (iii) L max. 2 T max. 1. Fragment. Bright turquoise. Surface pitted. **[Fig. 44.6c].**

GER 002 (G02) Bead. Tubular. SF 1289
D max. 4.5 H 2 Perforation D 2. Complete. Turquoise. Fine grained.

GER 002 (G02) Bead. Ovoid. SF 1285
D 4 H 10 Perforation 1-2. 98%. Blue green marvered with red on white paste. Surface eroded. **[Fig. 44.6d].**

GER 002 (G02) 2 Beads. SF 1239
(i) D max. 6.5 H max. 6 Perforation D 2 Complete. Spherical, squashed. Blue and colourless, banded; (ii) D 8 H 5.5 T wall 2.5. 50%. Doughnut. Blue/green.

GER 002 (G02) 2 Beads. Doughnut. SF 1232
D of both 4 Perforation D of both 2, H 2, 3. Both complete. Both pale yellow. Smaller translucent. larger opaque. **[Fig. 44.6e-f].**

GER 002 (G03) Bead. Doughnut. SF 1164
D 4 H max. 3 Perforation D 1.5. Complete. Pale yellow. Surface pitted.

GER 002 (G03) Bead. Cylinder. SF 1204
D max. 5.5 H 5 Perforation D 1. Complete. Lemon yellow. Surface pitted. **[Fig. 44.6g].**

GER 002 (G03) 2 Beads. SF 1306
(i) D 11.5 H 8 T wall 4.5. Appx. 50%. Biconical. Cobalt blue with a faint swirl of opaque white and a fine line of smoky brown across upper side **[Fig. 44.6h]**; (ii) D max. 7 H 7 T body 3. Fragment. Spherical. Olive green. Formed in two layers. Inner yellow green, fine outer shell of emerald green **[Fig. 44.6j]**.

GER 002 (G03) 3 Beads. SF 1314
(i) D 3 H 3 Perforation D 1. Complete. Cylinder. Green/turquoise; (ii) D max. 3 H max. 2.5 Perforation D 1. Complete. Doughnut. Emerald green; (iii) L max. 3 T max. 2. Appx. 20%. Turquoise.

GER 002 (G04) Bead. Doughnut. SF 1159
D max. 5 T max. 2 Perforation D 2. 70%. Pale yellow. 30% of surface lost through corrosion.

GER 002 (G04) Bead. Doughnut. SF 1273
D 4 H 3 Perforation D 1. 95%. Pale, lemon yellow. Moulded? Surface pitted.

GER 002 (G05) Bead. Ovoid. SF 1257
D 4 H max. 6.5 T wall max. 1.5. 50%. Pale green. Surface powdery, smooth.

GER 002 (G06) Bead. Spherical. SF 1263
D max. 4 H max. 4 Perforation D 1. Complete. Very dark turquoise. Surface pitted. **[Fig. 44.6i].**

GER 002 (G07) Bead. Spherical. SF 1143
D 6.5 L 6 Perforation D 1. 98%. Clear colourless glass core and exterior, gold leaf sandwiched between. Lentoid.

GER 002 (G09) Bead. Rounded Cylinder. SF 1268
D 3.5 H 4 Perforation D 1. Complete. Pale lemon yellow. Moulded. Flashing from manufacture present top and bottom.

GER 002 (G10) Bead. Doughnut. SF 1175
D 8 H 6 Perforation D 2. Complete. Opaque black. Spun. One side flatter, surface pitted.

GER 002 (G10) Bead. Doughnut. SF 1252
D 3 H 1 Perforation D 1. Complete. Opaque jade green. Spun.

GER 002 (G11) Bead. Tubular. SF 1411
D max. 13 H 20 T body 5. Appx. 40%. Marvered with white and yellow paste on a dark blue body. **[Fig. 44.6k].**

GER 002 (G11) Bead. Spherical. SF 1425
D 11 H 8.5 Perforation D 3. 60%. Smoked, dark brown/red. Spun onto a core, lip where core removed.

GER 002 (G12) Bead. Doughnut. SF 2096
D 12 H max. 4 Perforation D 5. 55%. Spun, two-tone cobalt blue and yellow. Made in two parts and fused together.

GER 002 (G19) Bead. Rounded Cylinder. SF 1350
D max. 7 H max. 6 T body max. 2. Appx 30%. Emerald green. Moulded. Surface very pitted.

GER 002 (G21) Bead. SF 1407
L max. 6.5 T max. 2. Fragment. Two-tone, lime green marvered with lemon yellow paste.

GER 002 (grab) 4 Beads. Doughnut. SF 2067
(i) L max. 11 H max. 14 T max. wall 3. Appx. 60%. Cobalt blue; (ii) L max. 7 H max. 3.5 T wall 2. Appx. 20%. Cobalt blue; (iii) L max. 6 H max.3.5 T max. wall 2. Appx. 20%. Cobalt blue; (iv) L max. 9 H max. 5 T max. wall 2. Appx. 40%. Turquoise blue, shape indistinct.

GER 004 Bead. Doughnut. SF 2441
D max. 10.5 H max. 3.5 Perforation D max. 6. 70%. Cobalt blue. Surface iridescent.

GER 015 (984) Bead. Rounded cylinder. SF 1474
L max. 5 H max. 4 T max. wall 2. 50%. Pale jade green, opaque.

GER 016 (911) Bead. Spherical. SF 1488
L max. 10 H max. 9 T max. wall 4. Appx. 30%. Emerald green, clear.

GER 016 (914) Bead. Spherical. SF 1486
L max. 9 H max. 7 T max. wall 3. Appx. 30%. Bright turquoise, clear.

GER 027 (1006) Bead. Doughnut. SF 1469
D max. 15 H max. 6.5 T max. wall 4. Perforation D min. 0.9 Bright turquoise. Spun, uneven shape.

TAG 012 Bead. Cylinder. SF 2098
D max. 5 H max. 4 Perforation D min. 2. Complete. Pale jade green, ends pinched.

ZIN 002 (N side) Bead. Subspherical. SF 2153
D max. 15 H max. 14 Perforation D max. 5. 50%. Opaque sky blue. Surface preserved.

ZUL 010 Bead. Tubular. SF 2437
H max. 8 W max. 9 T wall max. 3. 40%. Jade green, very eroded. **[Fig 44.6l].**
ZUL 010 Bead. Ovoid. SF 2422
H max. 12 W max. 10 T max. 5 Perforation D max. 2. 50%. Opaque white marvered and dragged with pink and green glass. Design of flowers and leaves. Surface eroded. **[Fig 44.6m].**

Glass Beads from the CMD Survey Work

By B. Hoffmann

The following beads were recorded from survey work carried out by Daniels in the 1960s-1970s. The arrangement here is first by type, then by site (using the FP gazetteer codes). All measurements are in mm.

Islamic(?) Ring bead, dark blue
GER 001 (grab)
L 3-5 W 9 Perforation D 5. Bead complete. Dark blue translucent. Wound. No bubbles. No weathering. Wide perforation along short axis.
UAT 004 (grab)
L 2-4 W 9 Perforation D 5. Bead, complete. Dark blue? Pulled and ends fused together. Wide perforation along short axis. Thick white layer of weathering.

Cylindrical, light green opaque
ZUL 006 Bead, complete.
L 21 D 5 D(int) 1. Light green opaque. Drawn. Cylindrical, slightly bent. Only perforation on one end, other end pinched closed. Open end cracked off. No weathering.

Globular light green opaque
GER 001. Bead, complete.
L 3 W 5 Perforation D 1. Light green opaque. Globular. Wound? Small perforation along short axis. Surface pitted.

Short cylindrical bead, opaque light green
GER 001.065 (grab) Bead, complete.
L 5 W 4 Perforation D 1. Short cylindrical. Drawn. Light opaque green. Perforation along short axis. No weathering. Islamic?

Long cylindrical bead, dark red.
GER 001.065 (grab) Bead, complete.
L 9 W 7 Perforation D 1. Broken into two halves. Cylindrical. Wound. White opaque core with dark red translucent casing. White layer of weathering Small perforation along short axis. Islamic?

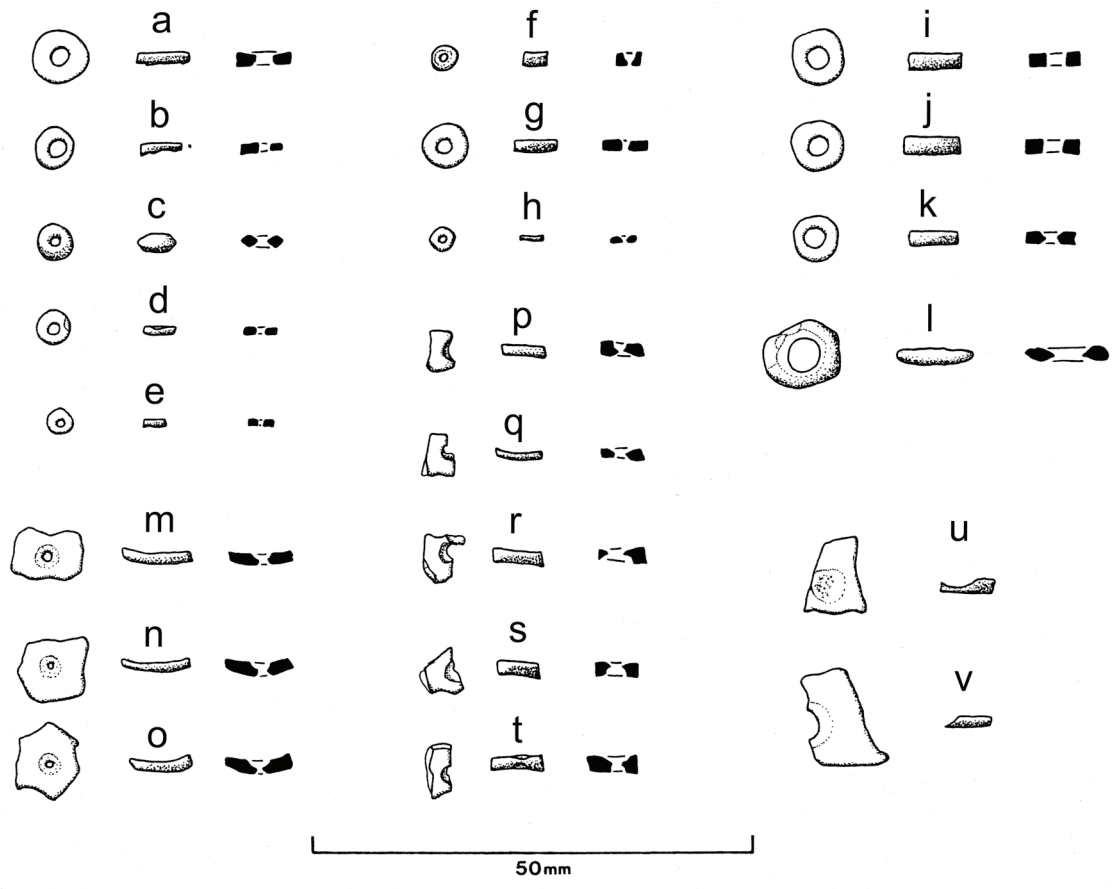


Figure 44.7. Ostrich eggshell beads and semi-formed beads from the FP survey.

Globular, turquoise opaque. (Glass, imitating amazonite?)
ZIN 220 Bead, complete.
L 3.5 W 4 Perforation D 2. Turquoise glass, opaque. Globular. Wound? Small bubbles. Small perforation along short axis.

Ostrich Eggshell Beads

EDU 005 Bead. Disc Irregular. SF 2361
D max. 9 min. 7.5 T 1.5 Perforation D 4. Unfinished. Pierced from both sides. Some rounding of edges. Perforation chipped. **[Fig. 44.7l].**
FJJ 045 Bead. Disc Irregular. SF 2103
D max. 11.5 T max. 2 Perforation D min. 1.5. Complete.
GER 001 (G1 surface find) Bead. Doughnut. SF 2175
D max. 3 T 1 Perforation D 1. Complete. Base slightly flattened.
GER 002 (grab) Bead. Irregular. SF 2129
L 5.5 W 4.5 T max. 1 Perforation D min. 1. Fragment. Pierced from inside. Exterior spalled.
GER 002 (grab) 19 Beads. SF 2031
(i) D 6 T 1.5 Perforation D min. 2. 98%. Disc. Sides smoothed. Exterior face spalled; (ii) D max. 5 T max. 1 Perforation D min. 1.5. 98%. Disc. Sides smoothed. Exterior face spalled. Perforation off-centre; (iii) D max. 4 H max. 1.5 Perforation D min. 1. 98%. Disc, biconical. Perforated from both sides. Chipped; (iv) D 4 T 1 Perforation D min. 1. 98%. Disc. Faces polished. Chipped; (v) D 3 T 1 Perforation D min. 1. 90%. Disc. Exterior spalled; (vi-viii) D max. 6 T max. 2 Perforation D min. 1. Fragments. Three perforated discs, unsmoothed. One spalled; (ix) D max. 11 T 2 Perforation D min. 1.5. Complete. Disc, irregular. Sides partially smoothed; (x-xiv) Five perforated fragments. Original surfaces intact; (xv-xviii) Four perforated fragments. Outer surface spalled; (xix) L max. 9 T max. 1.5. 80%. Incomplete perforation. Outer surface laminated. **[Fig. 44.7a-e].**
GER 002 (grab) 9 Beads. SF 2429
(i) D max. 3 T max. 1 Perforation D min. 1.5. Complete. Disc. Top, sides smooth, bottom spalled; (ii) D max. 4 T max. 1.5 Perforation D min. 1.5. Complete. Disc. Polished. Perforation off-centre; (iii) D max. 5 T max. 1 Perforation D min. 1.5. Complete. Disc. Unpolished. Pierced from inside, bottom spalled; (iv) D max. 5 T max. 1 Perforation min. 1.5 Complete. Disc. Unpolished, sides chipped. Bottom spalled; (v-ix) Five fragments. L max. 11 W min. 4 T 1.5-2 Perforation D 1-1.5. One burnt, spalled. One pierced from both sides.
GER 002 (grab) 2 Beads. Disc. SF 2071
Both T max. 1.5 Perforation D min. 1. (i) D max. 4. Sides and perforation polished. Underside spalled.; (ii) D max. 3.5. Both pierced from above.
GER 002 (001) 2 Beads. Disc. SF 1000
(i) D max. 4.5 T max. 1 Perforation D min. 1.5 Complete. Top and sides smoothed flat. Perforation off-centre; (ii) D max. 0.4 T max. 1.5 Perforation D min. 1.5. Appx. 70%. Top and sides polished.
GER 002 (003) 2 Beads. Irregular. SF 1030
Both L 6 W 5.5 Perforation D min. 1.5. Fragments. Taupe. Pierced from inside, outer surface spalled.
GER 002 (005) 6 Beads. Irregular. SF 1004
Max. dimension 7 min. 3. Fragments. All spalled. One pierced from both sides.
GER 002 (011) Bead. Disc. SF 1029
D max. 10 T max. 1.5 Perforation D max. 2. Unfinished. Faces and sides partly smooth. Pierced from both sides.
GER 002 (012) Bead. Irregular. SF 1031
L max. 8 T max. 1 T wall max. 3. Fragment. Pierced from inside. Unsmoothed.
GER 002 (013) Bead. Disc. SF 1021
D max. 6 T max. 1 Perforation D min. 1. Unfinished. Top and perforation smoothed. Sides uneven. Pierced from above.
GER 002 (016) Bead. SF 1530
L max. 13 T 1.5 Perforation D 1.5. Fragment. Four-sided. Pierced from inner surface. Outer spalled.
GER 002 (G01) Bead. Disc. SF 1116
D max. 3 T max. 1.5 Perforation D 1. Unfinished. Sides smoothed flat. Top and bottom unfinished. Pierced from above. **[Fig. 44.7f].**
GER 002 (G01) Bead. Disc. SF 1153
D max. 4.5 T max. 2 Perforation D min. 1.5. 98%. Faces and sides flat, polished. Pierced from above.
GER 002 (G01) Bead. Disc. SF 1220
D max. 4.5 T max. 1 Perforation D min. 1. 90%. Flat. Top and sides polished. Pierced from above.
GER 002 (G02) Bead. Disc. SF 1131
D max. 5 T max. 1.5 Perforation D 1.5. Complete. Top and sides smoothed. Pierced from above. **[Fig. 44.7g].**
GER 002 (G02) Bead. Disc. SF 1241
D max. 5 T max. 1 Perforation D min. 1.5. 90%. Burnt black. Inner side spalled.
GER 002 (G02) 2 Beads. Disc. SF 1236
D max. 5, 3.5 T of both max. 1 Perforation D of both min. 1. Both complete. Top flat, polished on both. Larger pierced from above. Smaller sides rounded, perforation off-centre.
GER 002 (G04) 2 Beads. SF 1158
(i) D max. 10 T max. 2 Perforation D min. 1.5. 80%. Disc. Chipped. Pierced from above; (ii) L max. 5.5 T max. 1 Perforation D min. 1. Fragment. Square – unshaped.
GER 002 (G05) Bead. Disc. SF 1122
D 5 T 1 Perforation D 2. Complete. Top, sides and perforation polished.
GER 002 (G05) 9 Beads. Irregular. SF 1255
L min. 6 – max. 10 T min. 1.5 – max. 2 Perforation D min. 1 – max. 2. Fragments. Pierced from inside. No shaping. Surfaces rough. **[Fig. 44.7m-o].**
GER 002 (G07) Bead. Disc. SF 1147
D max. 5 T max. 1 Perforation D 1. Complete. Top and sides polished. Pierced from above.

GER 002 (G07) 2 Beads. Disc. SF 1149
(i) D max. 8.5 T max. 2 Perforation D min. 1. 98%. Chipped, sides slightly smoothed. Pierced from beneath; (ii) D max. 4 T 1.5 Perforation D min. 1. Complete. Top and sides smooth, sides rounded. Pierced from above.
GER 002 (G09) Bead. Irregular. SF 1248
L max. 7 W max. 7 T 1.5 Perforation D min. 1.5. Fragment. Sides smoothed. Pierced from inside.
GER 002 (G09) Bead. Disc bevelled. SF 1293
D max. 3 T max. 1 Perforation D 1. Unfinished. Top partly shaped, polished. Perforation uneven. **[Fig. 44.7h].**
GER 002 (G10) Bead. Disc. SF 1179
L max. 5.5 T max. 1.5. Appx. 60%. Uneven perforation from inner side. Outer side spalled.
GER 002 (G12) Bead. SF 1340
D max. 3.5 T max. 1 Perforation D min. 1. Five joining fragments. Top and sides polished.
GER 002 (G12) Beads. Disc. 2
Both L max. 6 T max. 1 (i) T max. wall 2.5 (ii) T max. wall 3. Both Appx. 30%. Both unfinished and perforated from above.
GER 002 (G12) Bead. Disc. SF 1346
D max. 5.5 T max. 1.5 Perforation D min. 2. Complete. Top and sides polished. Pierced from above.
GER 002 (G12) 16 Beads. SF 1445
L max. 8 W max. 7. Unfinished. All perforated, three completely, two incompletely, eleven broken across perforation. Five perforated from both sides. **[Fig. 44.7p-t].**
GER 002 (G13) Bead. Bevelled biconical. SF 1374
D 5 H 1.5 Perforation D min. 1.5. Complete. Upper side polished and faceted. Lower side unfinished.
GER 002 (G13) Bead. Square. SF 1506
L max. 10.5 W max. 6.5 T max. 1.5 Perforation D min. 1.5. Five joining fragments. Sides smooth. Pierced from outer side of shell, shallow perforation.
GER 002 (G15) Bead. Disc. SF 1427
D max. 4.5 T max. 1.5 Perforation D min. 1.5. Complete. Subcircular. Polished flat on one side.
GER 002 (G16) Bead. SF 1457
L max. 7 W max. 6 T max. 2. Unfinished. Perforated from interior. Exterior spalled.
GER 002 (G18) Bead. Disc. SF 1355
D max. 11.5 T max. 2 Perforation D min. 2. Complete. Sides chipped, some smoothing. Perforated from both sides. Unpolished.
GER 002 (G18) Bead. Disc. SF 1377
D max. 6.5 T max. 1.5 Perforation D min. 1.5. Complete. Flat. Top and sides polished. Pierced from above.
GER 002 (G19) Bead. Irregular. SF 1343
L max. 8 W max. 5 T max. 1.5 Perforation D 2. Fragment. Pierced from inner side. Perforation incomplete. Surface spalled.
GER 002 (G19) Bead. Rectangular. SF 1352
L max. 7 W max. 7 T max. 1 Perforation D min. 1. Complete. Pierced from inner side of shell.
GER 002 (G20) Bead. Disc. SF 1383
D max. 6.5 T max. 2 Perforation D min. 1.5. Unfinished. Faces smoothed, Sides chipped. Pierced from above.
GER 002 (excav. area - grab) Bead. Disc Irregular. SF 2144
L max. 7 T max. 1.5 T wall max. 3. 50%. Chipped. Broken across perforation.
GER 027 (1007) Bead. Doughnut. SF 1467
D 4 T 1 Perforation D min. 1.5. 90%. One surface polished. One spalled.
GER 033 (C2) 3 Beads. Irregular. SF 1535
(i) L max. 9 W max. 9 T max. 1.5 Perforation D 2. Fragment. Four-sided, pierced from inner surface; (ii) L max. 10 W max. 9 T max. 1.5 Perforation D 2. Fragment. Seven-sided. Perforation polished; (iii) L max. 13 W max. 9 T max. 1.5 Perforation D 2. Fragment. Four-sided. Pierced from inner surface. Upper surface chipped.
GER 035 Bead. Disc. SF 2064
D max. 7 T max. 1.5 Perforation D min. 3. 98%. Sides polished.
TWE 044 Bead. Disc. SF 2222
D max. 6.5 T max. 1.5 Perforation D max. 2.5. Complete. Sides slightly rounded, outer surface polished. Perforation off-centre.
TWE 044 (excav.) 9 Beads. Disc. SF 2348
All complete. (i) D max. 6.5 T max. 1.5 Perforation D max. 2.5 Slightly squared; (ii) D max. 6 T max. 1 Perforation D max. 2.5; (iii) D max. 5.5 T max. 1.5 Perforation D max. 2.5. Perforation off-centre; (iv) D max. 4.5 T max. 1.5 Perforation D max. 2; (v) D max. 6 T max. 1.5 Perforation D max. 2; (vi) D max. 6 T max. 1.5 Perforation D max. 2; (vii) D max. 4.5 T max. 1.5 Perforation D max. 2; (viii) D max. 6 T max. 1 Perforation D max. 3. Perforation off-centre. Very weathered; (ix) D max. 4.5 T max. 1.5 Perforation D max. 2 Very weathered. **[Fig. 44.7i-k].**

Partially worked ostrich eggshell

GER 002 (G03) 1 Worked Fragment SF 1304
GER 002 (G13) 1 Worked Fragment SF 1372
GER 033 (B1) 6 Worked fragments SF 1542
All irregular, broken across an incomplete perforation. (i), (ii), (v) and (vi) are pierced from the interior.
(i) L max. 12 W max. 5 T max. 1.5. Four-sided; (ii) L max. 8 W max. 4 T max. 1.5. Four-sided; (iii) L max. 8 W max. 7 T max. 1.5. Four-sided. Pierced from exterior; (iv) L max. 11 W max. 9 T max. 1.5. Three-sided. Pierced from both sides; (v) L max. 8.5 W max. 7 T max. 1.5; (vi) L max. 12 W max. 8 T max. 1.5. Four-sided.
GER 033 (C1) 5 Worked fragments. SF 1536
(i) L max. 10 W max. 8 T max. 1.5. Irregular, five-sided. Incomplete perforation from interior; (ii) L max. 7 W max. 6 T max. 1.5. Irregular six-sided. Incomplete perforation from exterior; (iii) L max. 8 W max. 8 T 1.5. Irregular seven-sided. Incomplete perforation from both sides; (iv) L max. 9 W max. 8 T max. 1.5. Irregular five-sided. Incomplete perforation from interior; (v) L max. 6

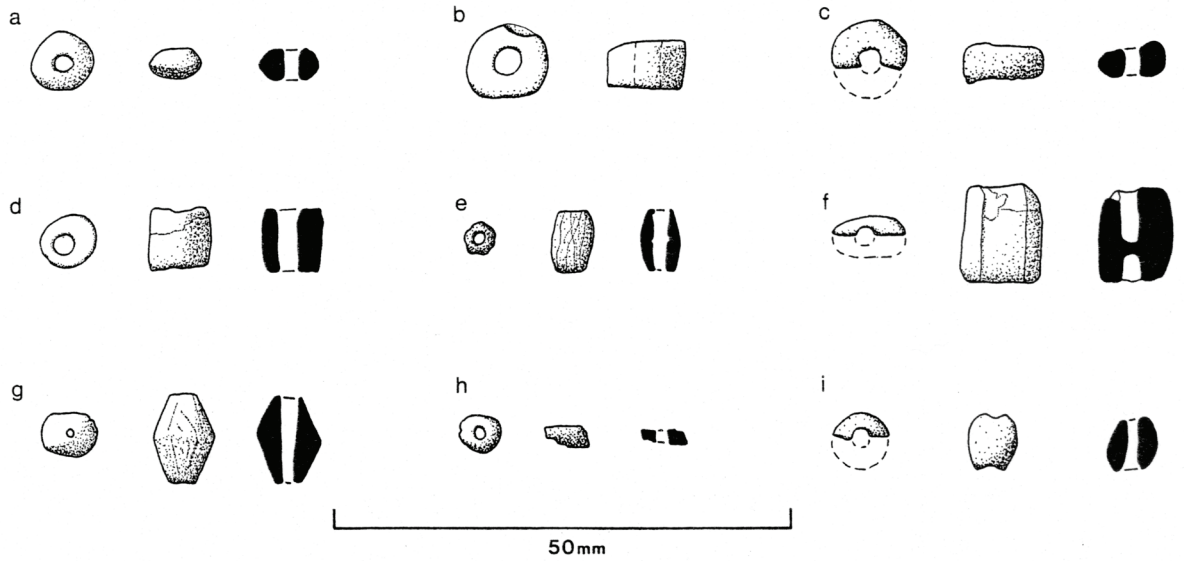


Figure 44.8. Carnelian and Amazonite beads from the FP survey.

W max. 7 T max. 1.5. Irregular four-sided. Pierced from both sides, broken across perforation.

Ostrich eggshell fragments

CHA 027 (1022) 1 fragment; EDU 005 8 fragments; EDU 016 3 fragments; EDU 016 46 fragments; EDU 018 22 fragments; EDU 020 4 fragments; EDU 022 72 fragments; EDU 023 fragment; EDU 024 4 fragments; EDU 028 11 fragments; ELH 005 (513) fragment; ELH 005 (558) fragment; ELH 006 (522) fragment; ELH 006 (524) fragment; ELH 006 (526) fragment; FJJ 001 (F29) fragment; FJJ 001 (F29) fragment; FJJ 042 fragment; GER 002 (grab) 12 fragments; GER 002 (005) 4 fragments; GER 002 (009) fragment; GER 002 (010) 4 fragments; GER 002 (012) fragment; GER 002 (G01) 31 fragments; GER 002 (G02) 23 fragments; GER 002 G03) 29 fragments; GER 002 (G04) 8 fragments; GER 002 (G05) 8 fragments; GER 002 (G06) 6 fragments; GER 002 (G07) 5 fragments; GER 002 (G08) 2 fragments; GER 002 (G09) 9 fragments; GER 002 (G10) 6 fragments; GER 002 (G11) 10 fragments; GER 002 (G12 62 fragments; GER 002 (G13) 12 fragments; GER 002 (G14) 1 fragment; GER 002 (G15) 1 fragment; GER 002 (G16) 3 fragments; GER 002 (G17) 1 fragment; GER 002 (G18) 1 fragment; GER 002 (G19) 1 fragment; GER 002 (G20) 1 fragment; GER 004 1 fragment; GER 015 1 fragment; GER 031 (A1) 1 fragment; GER 031 (A2) 2 fragments; GER 032 (A1) 1 fragment; GER 032 (B2) fragment; GER 032 (C3) 2 fragments; GER 033 (grab) 14 fragments; GER 033 (A3) 1 fragment; GER 033 (B1) 12 fragments; GER 033 (B3) 2 fragments; GER 033 (B5) 1 fragment; GER 033 (C1) 6 fragments; GER 036 (grab) 8 fragments; GER 038 (grab) 17 fragments; TWE 044 1 fragment; MAR 001 1 fragment; TAG 012 12 fragments; TAG 020 1 fragment; TIN 016 2 fragments; ZUL 007 1 fragment.

Other Shell Beads

These appear to have been made from fragments of eggshell, species uncertain.

GER 002 (005) 2 Beads. Irregular. SF 1004
Both fragments, broken across perforation.
(i) L max. 4.5 W max. 3 T max. 0.5; (ii) L max. 4.5 W max. 3 T max. 0.5

Carnelian Beads and Pendants

GER 002 (005) Bead. Doughnut. SF 1005
D max. 7 H 3.5 Perforation D 1.5. Complete. Pierced from side, perforation wider at ends. **[Fig. 44.8a].**
GER 002 (010) Bead. Tubular. SF 1013
D max. 8.5 H max. 5.5 min. 4 Perforation D 3. Almost complete. Pierced from one side, facets polished flat. **[Fig. 44.8b].**
GER 002 (010) Bead. Doughnut. SF 1017
D max. 7.5 H 4 Perforation D 2. 50%. Pierced from side, broken in manufacture? Unpolished. **[Fig. 44.8c].**
GER 002 (019) Bead. Tubular. SF 1024
D max. 7 H 7 Perforation D 1.5. Complete. Perforation off-centre, wider at one end. **[Fig. 44.8d].**
GER 002 (G01) Bead. Ovoid. faceted. SF 1216
D max. 4 H 7 Perforation D 1.5. Complete. Pierced from one side in two phases. Unpolished. **[Fig. 44.8e].**
GER 002 (G07) Bead. Doughnut. SF 1144
D max. 5 H 2.5 Perforation D 1. Complete. Pierced from one side. Polished.
GER 002 (G17) Bead. Spherical. SF 1390
D max. 3.5 H 3 Perforation D min. 1. Complete. Polished.
GER 002 (G04) Teardrop shaped stone. SF 1224
dimensions

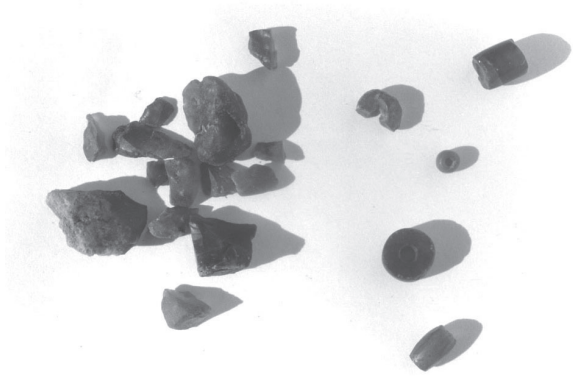


Figure 44.9. Carnelian beads and manufacturing chips from FP work at GER 002.

Carnelian flakes or chips

ELH 006 (522) 1 flake; GER 002 (grab) 58 flakes; GER 002 (G01) 14 flakes; GER 002 (G02) 51 flakes; GER 002 (G03) 49 flakes; GER 002 (G04) 10 flakes; GER 002 (G05) 13 flakes; GER 002 (G06) 16 flakes; GER 002 (G07) 4 flakes; GER 002 (G08) 6 flakes; GER 002 (G09) 17 flakes; GER 002 (G10) 12 flakes; GER 002 (G11) 59 flakes; GER 002 (G11) 1 possible carnelian flake; GER 002 (G12) 27 flakes; GER 002 (G12) 5 possible carnelian flakes; GER 002 (G13) 8 flakes; GER 002 (G13) 1 possible carnelian flake; GER 002 (G14) 1 flake; GER 002 (G15) 8 flakes; GER 002 (G16) 7 flakes; GER 002 (G17) 7 flakes; GER 002 (G18) 4 flakes; GER 002 (G19) 18 flakes; GER 002 (G19) 3 possible carnelian flakes; GER 002 (G20) 20 flakes; GER 002 (G21) 5 flakes; GER 002 (G22) 20 flakes; GER 016 (909) 2 flakes.

Amazonite Beads

GER 002 (grab) 2 Beads. SF 2130
(i) D 6.5 T 2. 50%. Doughnut. Turquoise, with white marbling; (ii) D max. 5 H max. 7 T max. 2. 60%. Faceted lozenge. Turquoise, with white marbling. Partially pierced.
GER 002 (grab) 2 Beads. Faceted tubular. SF 2123
(i) D max. 8 H 11; (ii) D max. 7 H 7 Perforation D both 2. Fragments. Both turquoise. (i) Pale green fading to white at base. **[Fig. 44.8f]** (ii) Bright blue. Both flattened and slightly polished.
GER 002 (G14) Bead. Biconical. SF 1401
D max. 7 H 10 Perforation D 1-1.5. Complete. Fine grained turquoise some white marbling. Faceted, polished. Pierced from one side. **[Fig. 44.8g].**
GER 002 (G09) Bead. Faceted tubular. SF 1296
L max. 4 D max. 7. Fragment. Turquoise, blue with white marbling. Sides shaped and smoothed.
GER 002 (G10) Bead. Tubular. SF 1176
D max. 4.5 H 2.5 Perforation D 1.5. 98%. Fine grained turquoise with some black veining. Polished. Perforation uneven. Possibly bored from both sides. **[Fig. 44.8h].**

Amazonite fragments/chips

CHA 027 (1021) 1 fragment; GER 001.066 1 fragment; GER 002 (grab) 8 fragments; GER 002 (G02) 4 fragments; GER 002 (G03) 3 fragments; GER 002 (G04) 2 fragments; GER 002 (G07) 1 fragment; GER 002 (G08) 5 fragments; GER 002 (G09) 3 fragments; GER 002 (G10) 1 fragment; GER 002 (G11) 8 fragments; GER 002 (G17) 1 fragment; GER 002 (G18) 1 fragment; GER 002 (G20) 1 fragment; GER 016 (909) 2 fragments; GER 016 (912) Turquoise stone (banded in quartz).

Other stone jewellery

GER 001 (N of G1) Bead (whitish green). SF 2200
D of top 5 L 4 Perforation D 5. 75%. Faceted tubular. White quartz? Sides smoothed.
GER 002 (grab) Bead. Faceted ovoid. SF 2130
D of top 5 L 4 Perforation D 5. 75%. White quartz? Sides smoothed.
GER 002 (grab) Bead. Ovoid. SF 2427
D max. 5.5 H max. 6.5 Perforation D 1.5. 50%. Pale blue/grey, very fine grain. Pierced from one side. Probably sheared during perforation. **[Fig. 44.8i].**
TWE 026 (996) Bracelet. SF 1458
L max. 38 T wall max. 11 W max. 12. 15%. Mottled green brown. Fine grained.

Other Unusual Stone/Manuports, etc.

These stones were probably collected and used as part of the jewellery and bead production going on at GER 002. The crystals, though unworked could easily be made into pendants, as could the worked quartz. The spherical haematite nodule (SF 1087) is naturally occurring in this region, however large numbers found on the G1 excavations at GER 001, suggest that they may have been collected and used for some other purpose.
ELH 005 Haematite nodule. SF 1087
GER 002 (G01) Rock crystal. SF 1219
GER 002 (G02) Decorative stone. SF1286
3 fragments of crystalline or coloured stone (1 colourless, 1 yellow)
GER 002 (G02) Worked quartz. SF 1237
GER 002 (G03) Decorative stone. SF 1315
2 fragments of an orange stone, 1 fragment of a blue stone
GER 002 (G03) Rock crystal. SF 1308
GER 002 (grab) Rock crystal SF 2072
GER 002 (grab) Rock crystal. SF 2035
3 fragments of rock crystal or quartz
GER 002 (grab) Decorative stone. SF 1529
4 fragments of a fine-grained yellow stone
GER 002 (Exc. Area – grab) Obsidian fragment. SF 2337

BEAD GRINDERS

By F. Cole

Bead grinders are formed from locally occurring soft sandstone or (much more rarely) from potsherds and have been found in abundance at GER 002 along with raw materials and beads in varying stages of completion. Over 100 were recovered during CMD's excavations at Sāniat Jibrīl (GER 002) (forthcoming in *AF 3*), and a further 43 were collected during survey at the same site. This must represent a very small percentage of the numbers used over the lifetime of the site, the majority of which lie buried. Bead grinders have also been found at other Garamantian settlements (including ELH 003, GER 001, GER 016, ZIN 001-003, GER 027 and possibly ZOU 003) and they seem to be a characteristic of such sites. However, similar material also occurs in the late Pastoral phase in the Sahara (Camps-Fabrer 1966, 23-27, where they are described as 'pierres à rainures'; Berger and Berger 2000), though no examples have been found on the Pastoral sites identified by the FP. There are a few examples known from CMD's excavations of early levels at Zinkekrā (Daniels 1968, 128, no. 37, 173, no. 350). Identified by their long grooves, semicircular in cross section, the grinders are of wildly irregular shape, often with grooves intersecting, as the grinder itself was constantly being worn down by use (Fig. 44.10). This feature makes it impossible to determine how complete a broken grinder is, since most of the break edges are along grooves; hence for this catalogue they are referred to as complete or incomplete only. As a general guide the largest are palm-sized enabling them to be held comfortably and securely in one hand while the bead was held in the other. The grooves usually taper and go from wide and deep to narrow and shallow, suggesting a unidirectional grinding action away from the body, and that the beads were ground one at a time. The dimensions of the grooves often vary slightly along their length, but overall it seems that the most common diameters were <4mm (type A), 4-6.9mm (type B), 7-8.9mm (type C and 9+mm (type D). Analysis of the recorded dimensions shows significant clustering within these groups. The most common groove size is Type B, followed by Type C, with finer Type A and the much larger Type D grooves being about equally represented, but about a third as common as the Type B. In the Catalogue, an attempt is made to indicate the predominant groove type(s) for each stone. The groove sizes are consistent with the range of sizes of stone and ostrich eggshell beads catalogued above.

It is not certain what material was shaped in the grinders, but it is likely that they were used for both ostrich eggshell and stone beads (the dimensions of both types of beads fit with the examples examined and the raw materials and half finished beads were also found in abundance at GER 002. The function of the process may have been both shaping and polishing of the bead. Microanalysis of ostrich eggshell beads by the Italian team working in Wādī Tanzzūft confirms the use of abrasive stone in the shaping and polishing process there (Cristiani and Lemorini 2002, 209-14, 216).

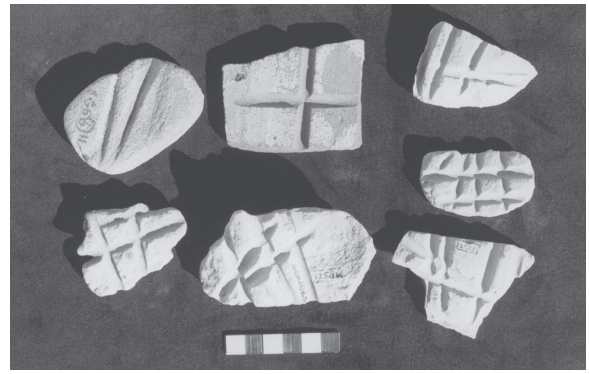


Figure 44.10. A selection of bead grinders from CMD/FP work at GER 002.

ELH 003 (576) Bead Grinder? SF1099
L 55 W 40 T 25. Sandstone. Grooved irregular fragment of medium grain red sandstone, worked on opposing faces. 5-sided, 4 broken edges. Grooves are rather V-shaped, interior very smooth. Unlike GER 002 grinders, but has parallels with similar grooved stones from Jarma excavations. Some sort of grinder/polisher.

GER 002 (grab) 6 Bead Grinders. SF 2032
(i) Sandstone. L max. 50 W max. 48 T max. 21. Incomplete. (ii) Sandstone. L max. 48 W max. 31 T max. 17. Incomplete. (iii) Sandstone. L max. 36 W max. 25 T max. 14. Incomplete. (iv) Sandstone. L max. 47 W max. 45 T max. 16. Incomplete. (v) Sandstone. L max. 32 W max. 21 T max. 10. Incomplete. (vi) Shale. L max. 56 W max. 42 T max. 14. Complete. (i) Irregular five-sided. Cream/yellow coarse grain. Light weathering. 4 grooves (4D). (ii) Irregular four-sided. Pink/yellow medium grain. Light weathering. 8 grooves (3B, 4C, 1D). (iii) Irregular five-sided. Pink/yellow coarse grain. Light weathering. Four grooves (3C, 1D). (iv) Irregular five-sided. Orange coarse grain. Medium weathering. 7 grooves (2A, 4B, 1C). (v) Irregular five-sided, one side worked. White, fine grain. Light weathering. 5 grooves (2A, 3B). (vi) Irregular triangular. White with orange discolouration fine grain. Light weathering. 7 grooves (7B).

GER 002 (grab) 2 Bead grinders. SF 2187
(i) Sandstone. L max. 58 W max. 51 T max. 24. Complete. Flattened triangular. Pink/white coarse grain. Light weathering. 3 grooves (1B, 2D). (ii) Sandstone. L max. 86 W max. 78 T max. 23. Complete. Irregular 5-sided. Pink/orange medium grain. Heavy weathering. 16 grooves – all indistinct.

GER 002 (grab) 5 Bead grinders. SF 2228
(i) Sandstone. L max. 48 W max. 45 T max. 19. Incomplete (ii) Sandstone. L max. 45 W max. 43 T max. 9. Complete (iii). Sandstone. L max. 43. W max. 27 T

max. 17. Complete. (iv) Sandstone. L max. 40 W max. 23 T max. 12. Incomplete (v) Shale. L max. 14 W max. 7 T max. 3.5. Incomplete. (i) Subrectangular, one side worked. Pink/brown coarse grain. Medium weathering. 7 grooves (7B) (ii) Irregular four-sided. Yellow/brown coarse grain. Light weathering. 8 grooves (6C, 2B). (iii) Irregular triangular. Pink/brown medium grain. Light weathering. 7 grooves (3B, 4C). (iv) Irregular triangular. Pale pink/grey coarse grain. Heavy weathering. 6 grooves (2A, 3B, 1C). (v) Irregular five-sided. White, fine grain. Light weathering. 4 partial grooves (4A).

GER 002 (Exc. Area – grab) 2 Bead grinders. Sandstone. SF 2235

(i) L max. 53 W max. 33 T max. 18 (ii) L max. 57 W max. 34 T max. 14. (i) Complete. Irregular four-sided. Pink/orange coarse grain. Light weathering. 13 grooves (4B, 8C, 1D). (ii) Incomplete. Irregular four-sided. Creamy/white medium grain. Light weathering. 14 grooves (2A, 9B, 3C).

GER 002 (N of exc. – grab) 2 Bead grinders. Sandstone. SF 2229

(i) L max. 55 W max. 22 T max. 20 (ii) L max. 69 W max. 48 T max. 27. (i) Incomplete. Irregular rounded. Pink coarse grain. Light weathering. 24 grooves (21A, 3B). (ii) Complete. Four-sided irregular. Pink coarse grain. Heavy weathering. 20 grooves (14B, 6C).

GER 002 (SSW of exc. – grab) Bead grinder. Sandstone. SF 2232

L max. 49 W max. 30 T max. 26. Irregular conical. Yellow/white medium grain. Heavy weathering. 9 grooves.

GER 002 (001) Bead grinder. SF 1514

L max. 55 W max. 47 T max. 19.5 Incomplete. Irregular triangular. White coarse grain. Slight weathering. 10 grooves.

GER 002 (001) Bead grinder. Sandstone. SF 1515

L max. 63 W max. 58 T max. 21. Incomplete. Irregular five-sided. Orange/yellow coarse grain. Heavy weathering. 10 grooves (2B, 4C, 4D).

GER 002 (001) Bead grinder. Sandstone. SF 1517

L max. 39 W max. 28 T max. 21. Incomplete. Irregular cylindrical. Yellow/white medium grain. Light weathering. 6 grooves (2B, 2C, 2D).

GER 002 (002) Bead grinder. Sandstone. SF 1033

L max. 69 W 44 T max. 22. Complete. Irregular triangular. White medium grain. Heavy weathering. 8 grooves (2B, 6C).

GER 002 (005) 2 Bead grinders. SF 1507

(i) Sandstone. L max. 97 W max. 45 T max. 33. (ii) Shale. L max. 44 W max. 33 T max. 8. Both incomplete. (i) Irregular rectangular, tapering. Yellow coarse grain. Light weathering. 8 grooves (2A, 4B, 1C, 1D) (ii) Irregular four-sided, flattened. White fine grain. Light weathering. 16 grooves (4A, 12B).

GER 002 (006) Bead grinder. Sandstone. SF 1520

L max. 56 W max. 48 T max. 19. Incomplete. Irregular four-sided, flat, one side worked. Pink yellow medium grain. Light weathering. 8 grooves (3B, 5C).

GER 002 (006) Bead grinder. Sandstone. SF 1526

L max. 65 W max. 42 T max. 31. Complete. Irregular triangular. One side unworked. Yellow grey coarse grain. Medium weathering. 9 grooves (2B, 7C).

GER 002 (007) Bead grinders. Sandstone. SF 1009

(i) L max. 42 W max. 25 T max. 22 (ii) L max. 68 W max. 58 T max. 21. Both incomplete. (i) Irregular wedge. Buff coarse grain. Light weathering. 5 grooves (2B, 2C, 1D). (ii) Irregular six-sided, flattened. Pink/orange fine grain. Light weathering. 3 grooves (3B).

GER 002 (010) Bead grinder. Sandstone. SF 1522

L max. 44 W max. 34 T max. 16. Incomplete. Irregular five-sided. White with orange discolouration fine grain. Light weathering. 4 grooves (1A, 3B).

GER 002 (010) Bead grinder. Sandstone. SF 1524

L max. 58 W max. 39 T max. 22. Incomplete. Irregular wedge. Pink/orange medium grain. Medium weathering. 10 grooves (5B, 3C, 2D).

GER 002 (010) 2 Bead grinders. Sandstone. SF 1008

(i) L max. 64.5 W max. 49 T max. 26 (ii) L max. 52 W max. 29 T max. 19. Both complete. (i) Five-sided irregular, worked one side only. Orange yellow coarse grain. Medium weathering. 7 grooves. (ii) Subrectangular. Tapering slightly. Light weathering. 12 grooves.

GER 002 (012) Bead grinder. Sandstone. SF 1525

L max. 80 W max. 56 T max. 34. Complete. Fragment of quern reused as a bead grinder. Irregular four-sided fragment. Pink/yellow coarse grain. Original quern surface has red pigment adhering. Light weathering. 3 grooves (1A, 1B, 1C).

GER 002 (015) Bead grinder. Sandstone. SF 1519

L. max. 47 W max. 22 T max. 19. Complete. Irregular wedge shape. Pink/white medium grain. Light weathering. 4 grooves (1B, 3C).

GER 002 (017) Bead grinder. Sandstone. SF 1523

L max. 90 W max. 53 T max. 17.5. Complete. Irregular four-sided, flat. Pink/yellow coarse grain. Heavy weathering. 5 grooves (2B, 2C, 1D).

GER 002 (018) Bead grinder. Sandstone. SF 1516

L max. 16 W max. 32 T max. 14 Complete. Irregular triangular, one side worked. Pink coarse grain. Heavy weathering. 2 grooves (1C, 1D).

GER 002 (018) Bead grinder. Sandstone. SF 1518

L max. 55 W max. 38 T max. 18. Incomplete. Irregular triangular. Pale yellow/pink medium grain. Slight weathering. 10 grooves.

GER 002 (018) 2 Bead grinders. Sandstone. SF 1022

(i) L max. 65 W max. 34 T max. 17; (ii) L max. 42 W max. 41 T max. 21. Both Complete. (ii) Rounded rectangular. Yellow/brown coarse grain. Heavy weathering. 5 grooves wide and shallow (3B, 2C). (ii) Irregular triangular. Yellow medium grain. Light weathering. 11 grooves (7B, 3C, 1D).

GER 002 (019) Bead grinder. Sandstone. SF 1521

L max. 52 W max. 39 T max. 21. Incomplete. Irregular triangular, worked on three sides. Pink and cream banded fine grain. Light weathering. 17 grooves (7C, 9B, 1D).

GER 002 (020) Bead grinder. Sandstone. SF 1528
L max. 55 W max. 69 T max. 34. Complete. Six-sided irregular. Pink and white banded coarse grain. Heavy weathering. 6 grooves (3C, 3D).
GER 002 (021) Bead grinder. Sandstone. SF 1513
L max. 49.5 W max. 45 T max. 24. Incomplete. Irregular triangular. Pink/grey coarse grain. Medium weathering. 2 grooves (1C, 1D).
GER 002 (029) Bead grinder. Sandstone. SF 1026
L max. 81 W max. 34 T max. 31. Complete. Irregular triangular, one side worked. Pale yellow medium grain. Heavy weathering. 1 groove (1C).
GER 016 (grab) Bead grinder. Sandstone. SF 2352
L max. 64 W max. 35 T max. 32 Incomplete. Irregular ovoid. Orange/yellow coarse grain. Medium weathering. 3 grooves (2C, 1B).
GER 027 (1007) Bead grinder. Sandstone. SF 1532
L max. 72 W max. 52 T max. 17. Appx. 50%. Ovoid disk. Orange/yellow coarse grain. Medium weathering. 1 groove (1B).

LEATHER ARTEFACTS

By F. Cole

Both articles probably date from within the last few centuries, the shoe being hand sewn, and thick soled. The bracelet is of a type still seen today; rows of multicoloured glass subspherical beads knotted together then sewn to a leather band. Preservation is probably the result of low RH% and high salinity. In particular the shoe is very distorted due to soluble salt formation.
GER 001.008 Beaded bracelet SF 2143
GER 001.046 Shoe 2 2044

PAPER

By F. Cole

Awaiting further study, the two Arabic manuscripts were recovered from recesses in mudbrick walls. Their rare preservation is a result of low RH% and high environmental salinity. The writing style is a form of cursive Arabic which was superceded in the 1950s, but their probable date relates to the latest phase of construction on site. Probably written by scribes, the manuscripts were formal letters of introduction, asking for greetings to be passed on to relatives in other settlements. In the event of the letter not being delivered, it was either returned to the sender, or kept in safety at its destination, rather than being destroyed. (pers. comm. Saad Salah Abdulaziz).
GER 001 Arabic manuscript SF 2050
GER 001 Arabic manuscript SF 2000

Figure 44.11. Spindle whorls for FP survey.

CERAMIC ARTEFACTS

By F. Cole

The spindle whorls were cut down from Tripolitania 1 amphorae sherds (pers. comm. A. Leone). In both cases the edges have been smoothed down. The loomweight is insufficiently well preserved to determine type. Although this is the only example from the survey, numerous loomweights have been discovered in CMD's excavations at Sāniat Jibrīl and the FP work at Jarma.
GER 002 (013) Spindle Whorl? SF 1020
D max. 64.5 W wall 28 T max. 7 Perforation D 8. 60%. Sub circular. Clipped amphora sherd. Interior spalled. Pink/orange fabric, orange/brown slip. **[Fig. 44.11].**
GER 002 (G03) Spindle Whorl? SF 1317
D max. 37 T max. 7.5 W wall 15 Perforation D 6.5. 60%. Circular. Clipped amphora sherd. Orange/black fabric and slip. Very worn. **[Fig. 44.11].**
GER 002 (grab) Loomweight. SF 2195
L max. 70 W max. 52 T max. 39. Incomplete. One original surface intact. Low fired clay, red orange with large inclusions.

VESSEL GLASS AND FAIENCE

by B. Hoffmann

Over 200 pieces of glass and faience from the Fazzān survey were studied. The material included ancient, Islamic and modern glass and faience from glass vessels, but excluded glass bangles and beads and faience beads, which are dealt with in other sections of this report. The glass has been recorded following standards set out by Cool and Baxter (1999). The significance of the EVE (Estimated Vessel Equivalent) values relates to profile zones, following Cool and Baxter's system.

The glass came from various sites covered by the survey, but a major part was found at Sāniat Jibrīl

(GER 002). The material is presented in the catalogue by site, but the following discussion will focus on the various types of the vessels, to provide a unified picture of Roman and Islamic glass ware available in the Fazzān. Comparatively little has been published on glass and faience from Fazzān – a gap that will hopefully be filled by a sequence of reports in the *Archaeology of Fazzān* volumes (*cf.* also, el-Kilani 1968; Tagart 1982; 1983; for sub-Saharan parallels, see Insoll 1998)

Most of the glass was collected as surface finds and this is reflected in the preservation of the material. A lot of shards were very badly pitted and heavily weathered, making it impossible in some cases to make definitive statements about details of manufacture or decoration of the original vessel. Interestingly the heavy pitting is particularly pronounced in earlier glass (1st - 2nd century AD), while it is not as well developed in material of the late Roman period or on the Islamic bangles. As these differences were apparent in material originating from the same location, it can not be explained solely by the different conditions of the surrounding soil. Although the vessel glass appears to have been imported, there are indications at Sāniat Jibrīl that glass working may have been taking place, perhaps for the production of beads, and that some part of the large number of glass fragments there may have been intended for recycling.

Cast Glass

The millefiori fragment from ELH 005 (SF 1095) dates from the 1st century AD. Millefiori glass was first used for vessels in the Late Hellenisic period and remained popular until the second half of the 1st century AD. The combination of dark-blue matrix with white spirals is quite common and can be paralleled with fragments from the Rhine (Velsen (Lith 1977, 17, no. 2 and 3), Valkenburg (Lith 1978, 22, no. 30), Asberg (Lith 1987, 223, no.5, pl. 98.5)), Vitudurum (Rütti 1988, 30, no.151), Aquae Helveticae (p. 105 no. 9-12, pl.1 and no.20 and 28, pl. 3), as well as from outside the Roman empire (from Espe/Denmark (Eggers 1951, no. 91) and from Zohor/ Slovakia (Kraskovska 1981, 12, fig. 1)). The majority of these glass vessels are pillarmoulded bowls, but the example from ELH 005 (SF 1095) is too small to draw any conclusion as to the original shape of the vessel. The concentration of parallels north of the Alps may reflect a higher level of publication of sites there, rather than necessarily a higher level of material originally present. Millefiori was available in Africa as well, as is shown by a fragment (dark blue matrix with white inclusions) from Karanis (Harden 1936, 90, no. 200, pl. XIII) and several fragments from Kharga oasis (pers. comm. M.D. Nenna).

Table 44.2. Total glass assemblage from surface collection by FP.

	Total no. of fragments:	**Total**
Ancient glass		
cast	6	
blown: monochrome	15	
blown: colourless	113	
blown: blue/green	32	
blown: greenish	33	
blown: container	2	
TOTAL (ancient vessel glass)		**201**
Faience	3	3
Modern	16	16
Total		**220**

Probably of similar date to the millefiori fragment are the blue/green pillarmoulded bowls, two of which were found near Jarma (GER 016 SF 1490, 1492), while the remaining four come from Sāniat Jibrīl (GER 002 SF 1188, 1313, 2124, 2139) and a further example from Qaṣr Watwāt (CMD UAT 001/002). Blue/green pillarmoulded bowls stand at the end of a long series of ribbed bowls, which begin with very different-looking vessels in late 1st century BC contexts (Group C) (Price 1985a, 291). They include a wide variety of colours ranging from colourless, greenish, and purple to millefiori and strongly coloured shallow and deep pillarmoulded bowls (Isings 1957, form 3; Price 1985a, 291). The blue/green variety was manufactured in large quantities and can be found all over the Roman empire. It is, because of its popularity, a key find and chronological indicator for the period of the second quarter to the end of the 1st century AD (Grose 1989, 244-247). African examples have been found amongst others at Carthage (Tatton-Brown 1994, 286, no. 52, fig. 15.3?), Cyrene (Oliver 1990, 95, no. 83, pl. 7, fig. 1), Sidi Krebish/Benghazi (Price 1985a, 291), Karanis (Harden 1936, 118-119), Quseir al-Qadim with other finds reported by Meyer from Meroe, Timna and Heis (Meyer 1993, 17f.), demonstrating that these bowls were frequently exported to areas outside the Roman empire in Africa and Arabia.

The colourless bowls with pronounced rims like the example from GER 002 (SF 2124) are less common, but are usually represented by one or two pieces in any medium to large assemblage of the early Roman period. The rim shape is shared by bowls, plates and dishes of varying diameter and depth and, together with other related rim shapes (like vessels with broad rims with overhang), they form the latest generation of Roman cast tablewares (Grose 1991, 15). The earliest examples of the type date to the Flavian period or perhaps even slightly earlier. The shape continued to be popular in the Trajanic/Hadrianic period, and can even sometimes be found in 3rd-century contexts (Hoffmann 2002, 59f, 65-68). In Africa they occur at Quseir al-Qadim (Meyer 1993, pl. 3, 52-59), Karanis (Harden 1936, 61f.), Tripoli (Price 1985b, 69, 96, fig. 6.1, no. 2) and Cyrene (Oliver 1990, 95, fig. 1,95 and fig. 2,96).

Mouldblown Glass

Mouldblown glass appears to have been uncommon in the Fazzān, with only five examples known in total. One of these is from the Fazzān project survey (see below), while another was found during in survey work in Old Jarma by Charles Daniels (CMD GER 001 (grab)). Two parallel ridges are a common feature on mouldblown glass and are often found as part of more complex designs of the 1st century AD (*cf*. Stern 1995).

The shape and material of a fragment from GSC 038 (SF 2109) single it out as unusual, as colourless hexagonal bottles are not a common commodity in the Roman world. It cannot be ruled out that the shard originally belonged to a hexagonal sectioned container (see below), but the colour of the glass material makes this seem unlikely. Colourless hexagonal jugs are otherwise known especially from Cologne, where they are often referred to as dolphin-bottles, because of their dolphin-shaped handles (Fremersdorf 1961, 62, pl. 121,1). These 3rd-century AD bottles, are thought to have been produced in the Cologne area and are rarely found elsewhere. Their occurrence in the Fazzān is hence highly unusual, but, given the high quality material recovered in CMD's survey and excavation, not without precedent.

Freeblown Glass

Painted glass is a rarity on most sites and its occurrence at Qaṣr Watwāt (UAT 002 (grab)) contributes to the unusual character of the glass known from the site. Although glass painting is a feature of the 1st to 5th century AD, fashion changes greatly during this time (Harden *et al.* 1988). The curvature of the glass and the colourless material suggest a stemmed goblet or a tall conical beaker as its most likely origin, and hence a date in the 2nd or 3rd century AD. A very close parallel of double lines and very stylised flower and leaf arrangements, can be found on the Europa and Ganymede beaker in the Begram hoard. This hoard has on the strength of a diatretum vessel found in it traditionally been dated to the 4th century, although a date in the late 1st century for at least some of the vessels in it (including this beaker), has recently been put forward (Nenna 1998, 155 no. 92).

The round facet (GER 002, SF 1151) attests to a further variety of high quality tableware – colourless facet-cut glass. As so little of the vessel survives, it remains impossible to assign it to any specific period of facet-cutting within Roman history, as both the late 1st/early 2nd century (e.g. Grose 1991, fig. 3) and the late 2nd to 4th centuries (e.g. Harden *et al.* 1987, 201, no. 110 and 204f., fig. 113) used facets like the one preserved.

The fragment from Zuwīla (ZUL 007 (grab)) comes from a very narrow vessel, and might even be the remains of a neck, rather than the body of a vessel. Interlocking facets are comparatively rare outside figural facet cutting (e.g. Harden *et al.* 1987, no. 109), so the isolated occurrence here, appears to be without a good parallel. If this fragment came indeed from a neck, this could possibly date the vessel to the early Islamic period (e.g. Kroeger 1995, 125-8), but again no exact parallel can be cited.

The three vessels with abraded decoration from Qasr Bin Dughba (GBD 001) and the Royal Cemetery (GSC 030 [BH ref nos 28 and 59]) belong to the last generation of Roman decorated table ware. On the basis of Klein's studies (1998 and 2000) of decorated cylindrical bottles, the Qasr Bin Dughba fragments are probably from a tall cylindrical bottle with two handles (Isings 1957, form 127) with five-zoned decor, ending in diagonal lines preserved on one fragment. The greenish bottle from the GSC 030 Royal Cemetery shows diagonal lines framed on both sides by the double horizontal lines, acting as separator between different decorative zones. This makes this one of the central zones of decoration on this vessel, but probably not the main form of decoration, for which usually a design in combination with facet cutting was prefered. If all these points are taken into consideration, another tall, two-handled bottle, seems the most likely original vessel shape.

Very little can be said about the shape of the third, globular vessel, also from the Royal Cemetery. Abraded decoration is found on a number of beaker and bowl shapes, but only rarely and hence good parallels are lacking. Abraded decoration has traditionally been dated to the 3rd and 4th century AD, but recent finds from well dated stratified contexts in the Northern Mediterranean suggest that it was at its most popular at the end of the 4th and the early 5th century AD, with some vessels still occuring in 6th century AD contexts (Fünfschilling 1998, 165 fig. 7; Foy 1995, 194-5).

Also part of the late Roman table ware repertoire are the vessels with blobbed decoration, which can be found all over the Roman world and some regional groups have been put forward (e.g. Dussart 1995, fig. 7,2; Foy 1995, 227, pl. 9; Harden *et al.* 1987, 113 no. 46; Sazanov 1995; Weinberg and Goldstein 1988, 88-93). Blobbed glass appears to be only rarely reported from Africa, but has been found at Berenike/Sidi Khrebish and in the al-Khārja oasis (pers. comm. J.Price and M.D. Nenna).

In the Fazzān examples are known from GER 002 (SF 1267), Wādī an-Nashw'a (CMD NSH 002 [BH ref no 57]) Sāniat Jibrīl and from other unidentified locations (CMD "F").

Early 2nd-century drinking vessels are attested by examples from GER 002 (SF 1130, 1151, 1229, 1381 and possibly 1202), as well as CMD GSC 30 (grab) [31-34]. These belong to a large group of cups and beakers which share the common feature of being made of colourless glass with a slightly flaring, cracked off and

ground rim. The body is usually decorated with wheel-cut lines. The shapes of these vessels vary widely, and include globular, cylindrical and carinated vessels, both on flat bases and on high, separately blown feet. They occur from the 1st century onwards and continue well into the second part of the 2nd century (Oliver 1990, 97; Price 1985b, 72). Similar rims are also popular in late antiquity, but these late vessels are more commonly made of greenish glass (e.g. Tatton-Brown 1984, fig. 66, 33-35). The earlier colourless bowls are known from Cyrene (Oliver 1990, 97, fig. 2, 106-7), Sabratha (Hayes 1986, 307, fig. 119, B18), Tripoli (Price 1985b, fig. 6.1, nos. 9-13); while a blue/green vessel with similar rim and decoration was found in Sabratha (Hayes 1986, 302, fig. 119, A32).

Tubular rims like the example from GER 016 (SF 1491) are very common on bowls and plates, and occur in monochrome glass, but more commonly in greenish and blue/green, as well (as here) in colourless material. They vary greatly in their diameters with the smallest being somewhere around 80-100mm, while the largest plates can have diameters of up to 450mm (Weinberg and Goldstein 1988, 41). The bowls occur widely throughout the Mediterranean as well as north of the Alps (Price 1992, 430f, no. 217-222). Examples from Greece come from Corinth (Davidson 1952, 101, fig. 8, 630; 631; 634; 635), Thebes (Braun and Haevernick 1981, pl. 35, 19) and Knossos (Price 1992, 430f. and 450, pl. 345, 218-223), while African examples include bowls from Karanis (Harden 1936, 72-76, nos. 89-116), Quseir al-Qadim (Meyer 1993, pl. 6, nos. 116-120 and 121), Cyrene (Oliver 1990, 98, nos. 119-123 and 124-134), Sidi Khrebish (J.Price pers. comm.), Gargarash and Sīdī al-Masri (Price 1985b, 78 and 98, fig. 6.4, nos. 44, 45 and 49). Further west they are known at Carthage (Hayes 1978, 190, fig. 1, 11; 1993, 290, fig. 1,2, 291, fig. 2,16 and 17; Tatton-Brown 1984, 195, fig. 65,7; 1994, 282, fig. 15.1, nos. 2; 4), Cherchel (Shepherd 1995, fig. 53, 22-24) as well as three different types of bowl with tubular rim in the Algiers Museum of Antiquity (D'Escurac-Doisy 1967, 145-147, fig. 19-21). Plain tubular rims occur from the Flavian period to the early 2nd century in Roman contexts (Isings 1957, form 44). The slightly everted tubular rims (like SF 1491) are sometimes decorated with scored horizontal trails on the rim, although this feature does not survive on the example from Jarma. This later variety is commonly known from late first/early 2nd century contexts (Oliver 1990, 98). After the 2nd century tubular rims occur mainly in the Eastern Mediterranean, where they can be found, for example, in 4th-century contexts in Jalame and Karanis (Harden 1936, 72-76 nos. 89-116; Hoffmann 2002, 179-80; Weinberg and Goldstein 1988, 41-44 fig. 4-3).

Drinking vessels with straight-sided fire-rounded rims like GER 002 (SF 1120, 1235, 1130, 1145) replace in the late 2nd century the colourless vessels with slightly-flaring rim. The most common variety is the low cylindrical beaker on single or double foot-rings (Isings 1957, form 82). The latter may be fragmentarily preserved at GER 002 (SF1291). Rarer, but using the same rim type are the straight-sided tall cylindrical flutes on stemmed or goblet feet. When not fully preserved (as in the case of the Sedeigna flutes, Leclant 1972), they tend to be more easily identifiable by their feet rather than their rims, but the diameters of all but GER 002 (SF 1120) are well within the recorded diameters for these vessels. A final and, given their popularity, most likely possibility are late Roman 'wineglasses' or rather standing lamps, which used the fire-rounded rims on greenish-colourless, greenish, blue/green, yellow-brown as well as colourless glass (Weinberg and Goldstein 1988, 40, from Sabratha; Hayes 1986, 311, fig. 121, B54, from Carthage; Tatton-Brown 1994, 284, fig. 15.2, no. 16 - Hayes 1978, 190, fig. 4, 31).

Two vessels from Tripolitania, one from Sīdī al-Masri and the other from Daphnia (Price 1985b, 75; 97, fig. 6.2, no. 24 and 25) provide parallels for the rim of GER 002 (SF 1134). Price (1985b, 75) quotes further examples of both drinking vessels from Cyprus, dating to the 1st-3rd century AD. The similar rims from GER 002 (SF 1313, 1305) are decorated with wheel-cut lines underneath the rim. A possible parallel comes from Cyrene (Oliver 1990, 96f, fig. 2,101), which does not seem to have produced any glass dating to after AD 200 (Oliver 1990, 101). Equally apparent at Cyrene are the applied trail found at Sāniat Jibrīl (GER 002, SF 2077). The fragment from the sanctuary of Demeter is dated by Oliver to the 2nd and 3rd century AD (Oliver 1990, 97f, fig. 3, nos. 113 and 114).

Slightly flaring, cracked-off rims are a feature of later Roman (late 3rd/4th century) glass, and are most commonly associated with either globular bowls (Isings 1957, form 96) or conical beakers (Isings 1957, form 106c), although the same rim also occurs on other vessel shapes. The globular bowls are most likely represented by the rim fragment from TAG 012 (SF 2150) and CMD site unknown [27], while the much smaller rim diameter of an example from GER 002 (SF1305) might well have come from a conical beaker. The olive green colour of the glass of the Tāqallit example (SF 2150) reinforces the late Roman character of the piece. Beakers of this type are known from Carthage (Hayes 1993, 290, fig. 1, 4-5; Tatton-Brown 1984, 198, fig. 66, 34-35; 1994, 284, fig. 15.2 no. 23), while globular bowls are known both from Carthage (Tatton-Brown 1984, 197, fig. 65, 18) and Sabratha (Hayes 1986, 308, fig. 120, B24).

Large bowls with everted fire-rounded rims (as in the example from UAT 009 (SF 2108) and the large bowl from an unknown site of Charles Daniels' survey) are part of later Roman table ware and due to their size, easily breakable and (perhaps therefore) never found in large numbers on any site (Hoffmann 2002, 130). They seem to be slightly more common in the Eastern and

African provinces, where similar large-rimmed vessels made of blue-green, greenish, yellowish, colourless or sometimes purple glass are a known from Carthage (Tatton-Brown 1994, 282-4, fig. 15.1, 7), Sabratha? (Hayes 1986, 309, fig. 120, B26), Karanis (Harden 1936, 56, pl. 11,28 and p. 125, pl. 15, 345) as well as from Cyprus (e.g. Vessberg 1956, 132, fig. 42.9, from Kazaphani), Jalame (Weinberg and Goldstein 1988, 40) and Sagalassos (Lightfoot 1991, p. 174, fig. 121,2). The majority of datable bowls and plates were found in third or 4th century AD contexts (Weinberg and Goldstein 1988, 40).

The high base-ring from GER 002 (SF 1406) very likely comes either from one of large plates like the example from UAT 009 (SF 2108) just discussed or similar items of tableware with slightly different rim finishes. With a diameter of 14 cm it is too large to derive from a glass jug and the only alternative would be a very large deep bowl.

The colourless vessel from GER 002 (SF 1305) probably also served as a bowl rather than as a drinking vessel. The poor state of its preservation makes it impossible to decide, whether it was cast or free-blown. The thick horizontal rim does occur on cast glass in the 1st century AD (Meyer 1993, pl. 5, 96; Oliver 1990, 95 no. 95 and 96; Price 1985a, fig. 24.3, no. 38) as well as in (usually blue-green or yellow-green) free-blown glass dating from the 4th century (Price 1985b, 76; 98, fig. 6.3, no. 33; Tatton-Brown 1984, 195, fig. 65,11; 1994, 286, fig. 15.3, no. 40). The present vessel, although close enough in general shape, disagrees with the quoted cast examples in details of the rim shape and from the blown examples in the material used, it seemed, therefore, advisable not to make a final decision as to its manufacturing process based on the available parallels alone.

Small cut-out folds below the rim as in the example from Zuwīla (CMD ZUL 007) are a rare find on Roman sites, the only good parallel is a fragment with an everted rim from a late 4th- to mid 5th-century AD deposit in Rome (Sternini 2001, 28; 55 fig. 12, 122), which may be from a beaker or a lamp.

Closed shapes

Apart from the small mould-blown bottle already discussed, bottles or small jugs are attested at GER 002 by the handles (SF 2139, 1446), as well as the narrow colourless neck (SF 2082). While among CMD's material there is a further shoulder of a cylindrical bottle and the everted fire-rounded rim of a small bottle or jug; both from al-Fjayj cemetery (FJJ 006 (3)). The latter is probably from a late Roman vessel, although the further details as to its original shape elude us (Sternini 2001, 61 fig. 16, 161).

The flaring rolled-in rim at GER 002 (SF 1162) is a variety of the late Roman jug/bottle rim discussed further below. Shepherd dates a similar piece from the Forum at Cherchel to the 3rd-5th century AD, and believes that these vessels are more frequently encountered further east (Shepherd 1995, 143, fig. 53,12). Finds in Egypt, i.e. in the Fayum, bear this out (Woolley and Randall-MacIver 1910, 73). At least three bottles with this rim type were found at Karanòg in the Sudan (Woolley and Randall-MacIver 1910, 72, pl. 37, 7344-6).

Other rim fragments from GER 002 (SF 2126, 1278) and CMD site unknown [BH ref no. 74] are the more common variety. Their flaring rims have an applied trail underneath the lip and belong to a large number of late Roman bottles and jugs that can be found on most sites in occupation from the 3rd century onwards. African parallels include examples from Cherchel (from a 5th-century AD context: Shepherd 1995, fig. 53,7); Carthage (Hayes 1993, 292, fig. 38-9; Tatton-Brown 1984, 207, fig. 68, 93-5) and Sabratha (Hayes 1986, 309, fig. 121, B41), as well as two jugs with wheel-cut lines from the Nubian cemetery at Karanòg (Woolley and Randall-Maciver 1910, 72, pl. 39, 7361 and 7362).

The greenish jug or bottle rim from Qasr Bin Dughba (GBD 001, SF 2148) with the thin wheel-cut lines on the neck is slightly unusual. The wide neck and the slightly flaring rim reminds one of early Islamic vessels, whose flaring is usually more pronounced (e.g. Tatton-Brown 1984, 205, fig. 67, 80 and with wheel-cut lines; Morrison 1984, 165, fig. 133c). Similar late Roman and early Islamic (i.e. 5th-7th/9th century) rims but without the wheel-cut lines are known from Cherchel (Shepherd 1995, 143, fig. 53, 12) and Carthage (e.g. Hayes 1993, 290, fig. 1,6; Tatton-Brown 1984, 204; fig. 67, 74) as well as from other late Roman sites around the Mediterranean (e.g. Dussart 1995, 358 type BVI.3242a ; Sternini 1995, 288, fig. 20.57).

Container

The bottle bases from TWE 029 (SF 2150) and CMD GDB 001 [76] belong to Roman prismatic jugs. The base motif from Tuwash suggests that the jug may have been square sectioned originally, but other base shapes like hexagonal and rectangular, as well as (much rarer) jugs with octagonal or triangular sections are also known. The variations within this type are large and their relative frequencies differ according to the area studied. In the NW provinces most of these vessels are square-sectioned and known in a high and a squat variety. Nearly all excavated examples are mould-blown and the vast majority have patterns on the base (Cool and Price 1995, 179-185; Hoffmann 2002, 215-218). In the E Mediterranean these bottles also exist in a free-blown variant without the base marks. The sides are usually flattened on a slab, producing thinner walled vessels, which have much more rounded angles. The latter tend to be mainly of a squat square shape. There are also substantial differences between different provinces in the possible rim-shapes and the base-patterns used (Charlesworth 1966; Isings 1957, form 50).

The African examples have not been sufficiently studied to make statistically relevant statements. The flattened free-blown variety is known in Egypt (e.g. Harden 1936, 248-50; Meyer 1993, 31) and Tripolitania (Price 1985b, 86 and 100, no. 69, fig. 6.10), while the mould-blown variety (like the TWE 029 example, SF 2150 and GDB 001) is frequently found in Cyrenaica (e.g. Oliver 1990, 101, pl. 16, 161, fig. 4), Tripolitania (e.g. Price 1985b, 86 and 100, nos. 70-73) and in Egypt at Erment and Gurneh (Woolley and MacIver 1910, 73) as well as at Quseir al-Qadim (Meyer 1993, pl. 11, 242 and 243). No close parallel for the base motif from Tuwash could be found in Africa, but a tall square bottle from the Tripolitanian villa at Zliten (Price 1985b, 100, no. 71, fig. 6:8) uses the same geometrical principles for its design.

The production of prismatic containers starts in the second half of the 1st century and continues into the late 2nd century (Cool and Price 1995, 184). Because they were produced in large quantities they appear still in 3rd-century contexts on established sites, but are rare or absent on sites that only begin at the end of the 2nd/ early 3rd century, suggesting that these late examples may be mainly residual (Hoffmann 2000, 172f.). The prismatic jugs were mainly used as storage containers in Roman contexts, and were only found at table in poorer households. Bottles do occur as exports outside the Roman empire (e.g. Scotland (Ingemark 1998, 176), in the Sudan (Woolley and Randall-Maciver 1910, 72, pl. 37, 7339) as well as in Axum and Taxila-Sirkap (Meyer 1993, 32)) leaving the problem of deciding, if they were originally traded for themselves or their contents.

Unidentifiable vessel shapes

The body fragment GER 002 (SF 1112) cannot be assigned to a specific vessel type. Multicoloured trails (in this case yellow and greenish), are particularly popular in the later 2nd and early 3rd century. Their most flamboyant use is on the snake-thread decorated glasses, esp. those produced in the Cologne area (e.g. Harden *et al.* 1987, 123-129, no. 55-58 and p. 136, no. 66). Too little survives to make any statements as to this particular vessel's shape or date.

Tubular base rings (one example from CHA 001, SF 2146, nine from GER 002, SF 1145, 1162, 1229, 1260, 1305, 2082, 2126) are very popular on both drinking vessels and bowls and plates. They occur throughout the Roman period in all the colours used for Roman glass.

Discussion of the assemblage

As with most assemblages from surface surveys, the glass discussed here is unlikely to give a representative sample of the material originally available in each of the settlements studied, but presents rather an overview of general availability in the area. Due to reasons of time and space this assemblage will not now be compared to the material reported from Caputo's survey or the material from Charles Daniels' excavations and survey, some of which came from the same sites. A fuller review of all ancient glass known from Fazzān will be carried out when the FP Jarma excavations are published. The glass found in the survey spans the 1st to *c.*5th/6th century AD (with one possible early Islamic vessel and 4 bangles from the Mamluk or Ottoman period). There are however, marked differences in the distribution of the material:

Table 44.3. Date spread of FP survey glass.

Period	GER 001	GER 002	GER 015	GER 016	ELH 005	TWE 029	GSC 038	UAT 008-009	GBD 001	TAG 012
mid 1st - mid 2nd c		9		2	1	1				
2nd-3rd c.		5		1			1	1		
3-4th c.		3		1				1		1
4-6th c.		8							1	
Islamic	2		1	1						

The survey shows, that over most of the period Fazzān had access to Roman glassware. Tableware dominates the assemblage, although the vessel from TWE 029 and CMD GDB 001 show that at least a few containers were also imported. Almost all the sites featured here are in the immediate vicinity of Jarma, though GBD 001 lies in the E of the Wādī al-Ajāl and Zuwīla in E Fazzān, showing that glass finds should also be expected elsewhere in Fazzān. Finds are from both settlement and cemetery sites. Worthy of comment is the complete absence of unguentaria, or other vessels that could be linked to the storage of perfumes or bath oils. However, in the late Roman period a number of glass lamps are found in the Fazzān (amongst them possibly GER 002, SF 1120, 1235, 1130, 1145) adding the function of lighting equipment to the assemblage. It has to be admitted, however, that there is no guarantee that these vessels would have been used in the Fazzān in this way, as they make perfectly good drinking vessels in their own right.

A number of vessels discussed here would be counted as luxury vessels in the Roman Empire: the facet-cut vessel (SF 1151), and the vessel with multi-coloured trails (SF 1112), both from GER 002, are the most likely candidates, but too little survives of either to confirm this. The cast colourless bowl from GER 002 (SF 2124) and the two large dishes or bowls from UAT 009 and from GER 002 (SF 1406), are unusual, but common enough to be counted amongst the medium range of tablewares, rather than as exceptional pieces. Further luxury items are the painted glass, the facet-cut and abraded vessels from CMD's survey. As with all exported items the

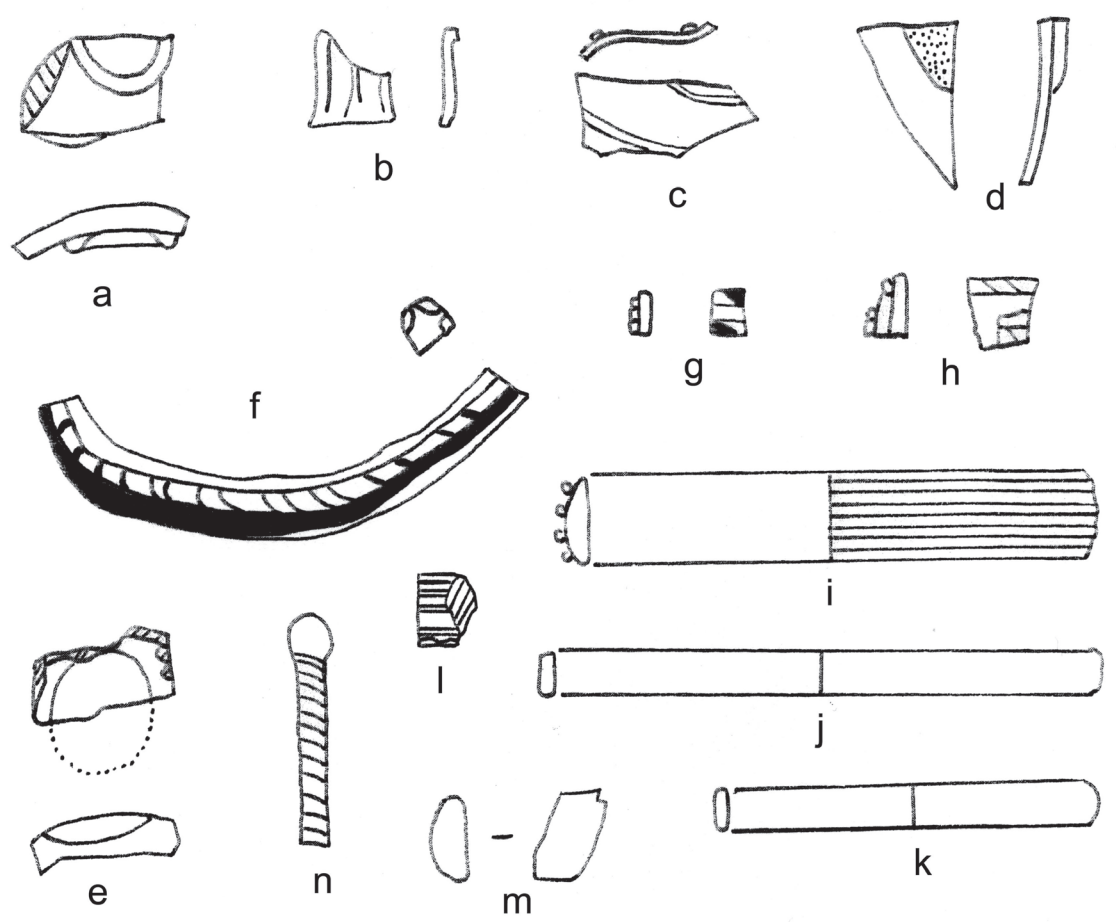


Figure 44.12. a) - Vessel glass from FP survey work; f)-m) glass bangles from FP survey work; n) glass pin or dropper from FP survey work.

value and availability which these objects commanded in their country of origin need not necessarily relate to a similar standing in the area they eventually appear in. Other criteria for the selection represented by the glass assemblage need also to be taken into account. The Fazzān is only reachable by overland transport and under these circumstances transporting larger vessels like the dishes must have constituted quite a risk, however carefully they were originally packed. It is, therefore, possible that some of these vessels may have been selected for their sturdiness, rather than intrinsic value in the province. The fact that most of these vessels find close parallels along the Cyrenaican and Tripolitanian coast is hardly surprising, as they were obvious trade partners for the Fazzān. The other obvious trading partner was Egypt and the other oases in the Western desert, but no detailed glass reports could be found in time for this report. The Fazzān glass also shows frequent links with Carthage, but this is most likely due to the size of the city and the comparatively large amounts of material now published from it.

Faience from the FP

GER 002 (Sāniat Jibrīl) Garamantian settlement
Faience vessel
GER 002 (N of excav.) SF 2126
Fragment. Faience dark blue, glazing entirely removed. Straight rim with rounded lip. Conical body? White layer of weathering on the inside. D 70 H(ext) 9 T 2 EVE 20. 34 degrees.

Glass from the FP survey

CHA 001 (al-Kharaʿiq) Garamantian cemetery
CHA 001 (grab) Glass. SF 2146
Fragment, base. Colourless. Tubular base-ring. Milky layer of weathering.
D 50 H(ext) 5-6 T 1 EVE 20

ELH 005 (al-Ḥaṭīya) Garamantian settlement
ELH 005 (514) Glass. SF 1095 (FP98)
Fragment, body. Millefiori: Blue matrix with white spirals? Rough surface.
Dims: 6 x 8 T 2 EVE 20?

GBD 001 (Qaṣr Bin Dughba) Garamantian settlement
GBD 001 (grab) SF 2148
6 fragments (3 joining), rim and neck. Greenish. Bottle or jug. Flaring rim, folded inward and partly fire-rounded. Circular neck with 2 wheel-cut lines. Pitted surface. Milky weathering. D(rim) 56 H(ext) 47 T 3 EVE 28 or 34

GER 002 (Sāniat Jibrīl) Garamantian settlement

Cast glass

Pillarmoulded bowls.
GER 002 (G03) SF 1313
Fragment, body. Blue/green. Single rib of pillarmoulded bowl. No bubbles. Surface badly pitted.
Dims: 9 x 16 T 3 EVE 20
GER 002 (G02) SF 1188
Fragment, rim. Blue/green. Straight rim and onset of rib. No bubbles. Surface badly pitted.
Dims: 16 x 10 T 2.5 EVE 20
GER 002 (grab) SF 2124
Fragment, body. Blue/green. Single rib of pillarmoulded bowl. Surface heavily pitted. Rainbow Iris. Dims: 20 x 13 T 1 EVE 20
GER 002 (S/SW of excav. - grab) SF 2139
Fragment, body. Blue/green. Single shallow rib from a pillarmoulded bowl?. Pitted surface. Dims: 10 x 15 T 1 EVE 20

Cast bowl with horizontal rim
GER 002 (grab) SF 2124
Fragment, rim. Colourless. Conical bowl with horizontal rim, with two pronounced ledges. Rough surface. Rainbow Iris. D 180 H(ext) 10 T 1 EVE 40

Blown glass

Blobbed Glass
GER 002 (G08) SF 1267
Fragment, body. Greenish glass with applied dark blue blob. Surface matt. No other weathering. Dims: 10 x 18 T 4 EVE 14 or 20 **[Fig. 44.12d].**

Greenish fragment with yellow trail
GER 002 (G01) SF 1112
Fragment, shoulder or base. Greenish with yellow opaque trail. Globular vessel, trail on shoulder, another self-coloured trail faintly visible on the edge of fragment. Pitted surface. Dims: 9 x 21 T 2 EVE 14?
[Fig. 44.12c].

Ribbed body fragments
GER 002 (N of w/b) SF 2126
Fragment, body. Greenish/colourless. Curved body fragment with vertical (?) rib. Optically blown?. Outer surface pitted, inner surface smooth. Dims: 12 x 16 T 1 EVE 14 or 20

Facet-cut glass
GER 002 (G01) SF 1151
Fragment, body. Colourless. Facet-cut beaker or bowl. One round facet. Milky layer of weathering, some pitting. Dims :15 x 9 T 4 EVE 20 **[Fig. 44.12e].**

Wheel-cut lines
GER 002 (G06) SF 1202
Fragment, body. Colourless. Eight concentric wheel-cut lines. White layer of weathering. Dims: 32 x 25 T 1-2 EVE 20?

Cracked-off and ground rims
GER 002 (G01) SF 1229
Fragment, rim. Colourless. Slightly flaring rim. Cracked off and ground smooth? Wheel-cut line on the outside. Surface pitted. White layer of weathering in places. Glass no longer transparent. D *c.*120 H(ext) 10 T 1 EVE 20
GER 002 (G02) SF 1130
Fragment, rim. Colourless. Slightly flaring rim. Cracked off and ground smooth? Wheel-cut line below rim. Surface pitted. White layer of weathering in places. Glass no longer transparent. D *c.*100 H(ext) 16 T 1 EVE 20
GER 002 (G13) SF 1381
Fragment, rim. Colourless. Slightly flaring rim. Rim cracked off, but not ground. Rough surface. Milky layer of weathering. D *c.*70 H(ext) 11 T 1 EVE 20

Late Roman cracked off rims
GER 002 (G03) SF 1305
Fragment, rim. Olive green. Slightly flaring rim cracked off and ground. No bubbles. White layer of weathering on the outside. D 80 H(ext) 6 T 1 EVE 20

Straight fire-rounded rims
GER 002 (G05) SF 1120
Fragment, rim. Colourless. Straight fire-rounded rim, Cylindrical body? No Bubbles. Pitted Surface. D *c.*110 H(ext) 8 T 1 EVE 20
GER 002 (G02) SF 1235
Fragment, rim. Colourless. Straight fire-rounded rim. Cylindrical body? Heavy pitting. Milky weathering.
GER 002 (G02) SF 1130
Fragment, rim. Colourless. Straight fire-rounded rim. Slightly rough surface. Milky layer of weathering.
D 60 H(ext) 8 T 1 EVE 20
GER 002 (G07) SF1145
Fragment, rim. Colourless. Straight fire-rounded rim. milky layer of weathering. D 70 H(ext) 5 T 1 EVE 20

GER 002 (G03) SF 1134
Fragment, rim. Colourless. Slightly flaring rim with straight lip. No bubbles. Cracks in surface. White layer of weathering in places. D 70 H(ext) 9 T 1 EVE 20

Fire-rounded rims with wheel-cut lines
GER 002 (G03) SF 1313
Fragment, rim. Colourless. Fire-rounded, slightly flaring rim. Two wheel-cut lines below the rim. Milky layer of weathering. No pitting. D *c.*70 H(ext) 12 T 1 EVE 20
GER 002 (G03) SF 1305
Fragment, rim. Colourless. Fire-rounded, slightly flaring rim. Two wheel-cut lines below the rim. Milky layer of weathering. No pitting. D *c.*100 H(ext) 13 T 1.5 EVE 20
Slightly flaring fire-rounded rim with trail
GER 002 (grab) SF 2077
Fragment, rim. Colourless. Slightly flaring rim with straight lip. Trail under rim. Pitted surface. Milky weathering. D 70 H(ext) 12 T 1 EVE 20

Bowl with horizontal rim
GER 002 (G03) SF 1305
Fragment, rim. Colourless. Horizontal, fire-rounded rim. Small bubbles. Pitting under the rim. Matt surface. D 90 H(ext) 3 T 1-3 EVE 20

Handles-
GER 002 (S/SW of m/b bldg) SF 2139
Fragment, handle. Blue/green opaque and colourless. Thread handle, lower body attachment. Milky surface. H(ext) 10 W 6 T 1 EVE 14
GER 002 (G12) SF 1446
2 joining fragments, trail of glass. Blue/green/ colourless, transparent. Miniature handle.
H 11 W 9 T 1. **[Fig. 44.12b].**

Bottle or jug neck
GER 002 (Area 4 From {312}) SF 2082
2 joining fragments, rim. Colourless. Cylindrical neck. Heavily pitted surface. No bubbles. D 16 H(ext) 22 T 2 EVE 14 or 17

Late Roman horizontal folded-in bottle rim
GER 002 (G03) SF 1162
Fragment, rim. Colourless. Rim rolled in and than folded horizontally out. Small bubbles. Milky layer of weathering in places. D 48 H(ext) 6 T 1 EVE 14

Late Roman bottle rims
GER 002 (grab) SF 2126
Fragment, rim. Colourless. Flaring rim with straight lip and applied trail underneath. Surface badly pitted.
D 54 H(ext) 17 T 1 EVE 14
GER 002 (G01) SF 1278
Fragment, rim. Colourless. Flaring rim with straight lip and applied trail underneath. Inner surface missing. White layer of weathering in places, glass no longer transparent. D 46 H(ext) 8 TH(ext) 1 EVE 14

High folded base-ring (from large plate/dish?)
GER 002 (G12) SF 1406
folded base-ring. Surface heavily pitted and dulled. Glass no longer transparent. D *c.*140 H(ext) 11 T 2 EVE 20

Central base-ring (applied)
GER 002 (G09) SF 1291
Fragment, base. Colourless. Domed Base with centrally applied base-ring. No pontil mark. Milky layer of weathering. Dims: 10 x 17 T 3 EVE 20 or 14
[Fig. 44.12a].

Folded base-ring
GER 002 (N of w/b) SF 2126
Fragment, base. Colourless. Folded base-ring. No pontil mark surviving. Small bubbles. Surface slightly pitted and some white weathering. Glass no longer transparent. D 44 H(ext) 6 T 2 EVE 20
GER 002 (G06) SF 1260
2 fragments, probably from the same base. Colourless. Folded base-ring. Pitted Surface. White weathering in places. Glass no longer transparent. D *c.*40 H(ext) 5 T 2 EVE 20
GER 002 (G01) SF 1229
Fragment, base. Colourless. Folded base-ring. Surface badly pitted. Glass no longer transparent. D 46 H(ext) 6 T 2 EVE 20
GER 002 (G03) SF 1305
Fragment, base. Colourless. Folded base-ring. Surface badly pitted and cracked. White layer of weathering.
D 50 H(ext) 6 T 1 EVE 20
GER 002 (G03) SF1305
Fragment, base. Colourless. Folded base ring. No pontil mark. Milky layer of weathering. D 52 H(ext) 5 T 1 EVE 20
GER 002 (G03) SF 1162
Fragment, base. Colourless. Folded base-ring. No pontil mark. Milky layer of weathering. Pitting on the outside. D 48 H(ext) 8 T 1 EVE 20
GER 002 (Area 4 From {312}) SF 2082
Fragment, base. Colourless. Folded base-ring. Milky layer of weathering. Some cracks in surface. D 56 H(ext) 7 T 1 EVE 20
GER 002 (G07) SF 1145
Fragment, base. Colourless. Folded base-ring. Milky layer of weathering. D 50 H(ext) 5 T 1 EVE 20
GER 002 (Area 4 From {312}) SF 2082
2 joining fragments, Base, complete. Colourless. Tubular base-ring with pontil mark. Thick white layer of weathering. D 42 H(ext) 6 T 1 EVE 20

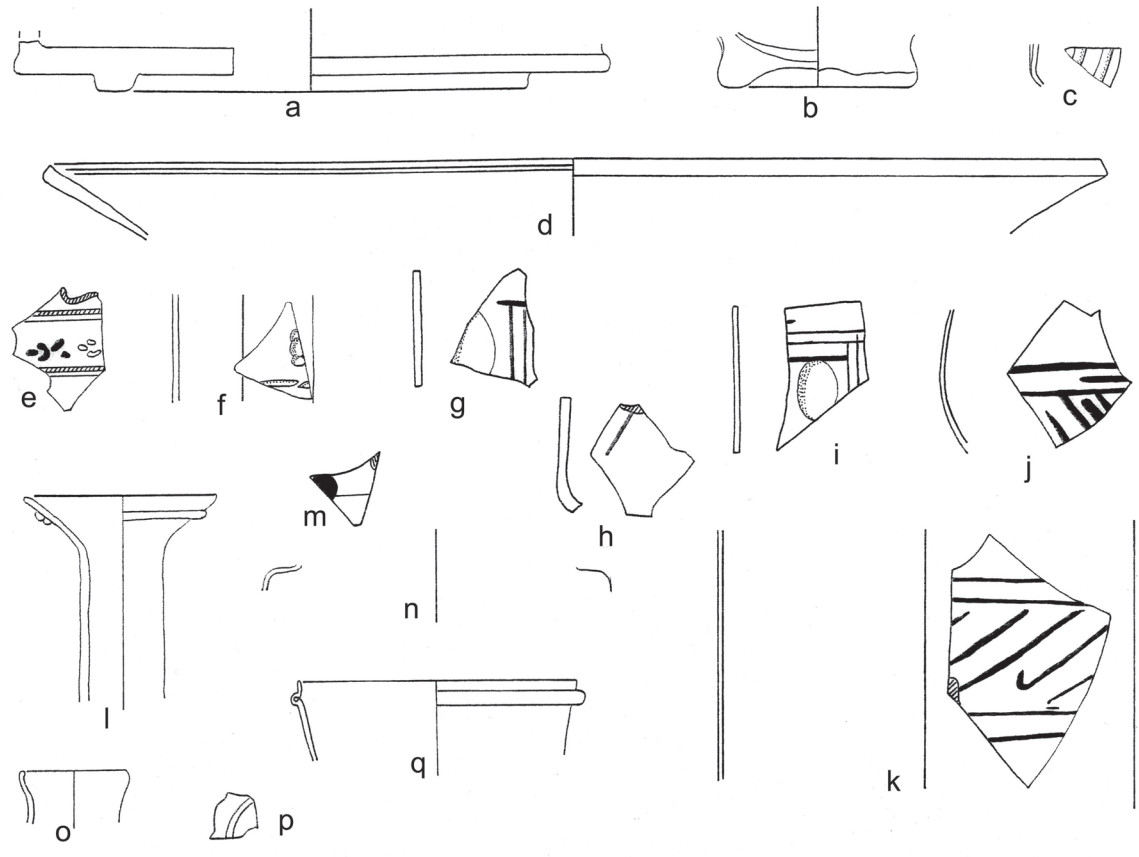


Figure 44.13. Faience and glass vessels from the CMD survey work.

Pillarmoulded bowl
GER 016 (Garamantian settlement)
GER 016 (902) SF1490
Fragment, body. Blue/green. Pillarmoulded bowl. Single rib. Pitted surface.Dims: 22 x 10 x 7 EVE 20
GER 016 (903) SF 1492
Fragment, rim. Blue/green. Pillarmoulded bowl. Straight rim and beginning of rib. Pitted surface.
D 160 H(ext) 12 T 2 EVE 20

Tubular rimmed bowl
GER 016 (911) SF 1491
Fragment, rim. Greenish. Bowl/Plate. Rim bent outwards to form a hollow tube, than horizontally bent out? White layer of weathering in places. Surface pitted. D *c.*140-160 H(ext) 8 T 1 EVE 20

GSC 038 Garamantian cemetery
GSC 038 SF 2109
Fragment, body. Colourless. Straight-sided hexagonal or octagonal bottle. No bubbles. White layer of weathering on the outside. S1(ext) 22 S2(ext) 3 H(ext) 48 T 1 EVE 14

TAG 012 Garamantian cemetery
TAG 012 SF 2099
Fragment, rim. Olive Green. Late Roman bowl? Slightly flaring rim, cracked off and ground smooth. Globular (?) Body. Pitted surface. D 80 H(ext) 20 T 1 EVE 40

TWE 029 Garamantian settlement
TWE 029 SF 2150
Fragment, base. Blue/green. Square bottle. Flat base with moulded design. Four leafed flower. S1(ext) 47 S2(ext) 50 T 1 EVE 14

UAT 009 Garamantian cemetery
UAT 009 SF 2108
Fragment, rim. Yellowish. Large flaring bowl or plate with fire-rounded rim. Milky weathering. No bubbles.
D 280-300 H(ext) 15 T 1 EVE 40

UAT 008 Garamantian cemetery
UAT 008 SF2110
Fragment, rim. Colourless. Slightly flaring rim with cracked-off rim, ground smooth. Globular body. Wheel-cut lines under rim and on the shoulder. Light pitting on the outside. Milky weathering. D 74 H(ext) 27 T 1 EVE 40

Undiagnostic Vessel Glass

Additional shards of non-diagnostic body sherds of probably ancient glass were collected at the following sites: ELH 005 (514); ELH 006 (524); GER 004; TWE 028.

Glass and faience recorded by the CMD survey

By B. Hoffmann

The following material was catalogued in Newcastle and appears to relate to survey collections. A few pieces are no longer attributable to a specific site, but are certainly part of the Fazzān collection and have been included here as 'Site unknown'. The preceding discussion also covers this collection. Glass from CMD's excavations will be published in a separate report in *AF 3*.

Faience

Faience vessels from CMDs survey work
TWE 015 (grab) [BH ref no. 2]
1 fragment, base. Low foot ring on flat base. Right angle turn with pronounced ledge. Mid-blue glaze preserved on both sides. chipped in places. Brown layer of weathering. D(max) 170 D(foot ring) 125 H(ext) 15 T 8 **[Fig. 44.13a].**
ZIN 003.001/002 [BH ref no. 4]
1 base fragment. Low base. Outside dark blue glazing, inside very thick light blue/green. Base itself unglazed. D 58 H(ext) 16 T 7 **[Fig. 44.13b].**

Faience Body fragments

UAT 005 [BH ref no. 6.].
2 body fragments. Mid blue glaze. a) Dims: 18 x 25 T 5; b) Dims: 6 x 16 T 6

Glass

Pillarmoulded bowl

UAT 002 (01) Cemetery [BH ref no. 14]
Fragment, body. Blue/green. Pillarmoulded bowl. One rib. White layer of weathering. Dims: 13 x 25 T 1.5 EVE 20

Mould-blown

GER 001 (grab) Old Jarma Settlement
[BH ref no. 15]
Fragment, body. Blue/green. Curved fragment, Two ridges visible. Motif? Silver weathering in places. Dims: 12 x 17 T 1 EVE 20 or 14 **[Fig. 44.13c].**

Freeblown

Colourless Conical bowl
Site unknown [BH ref no. 3]
Fragment, rim. Colourless. Straight rim (wheel-polished), conical body. Wheel-cut groove on the inside below the rim. No weathering. D *c.*300 H(ext) *c.*20 T 2 EVE 20 **[Fig. 44.13d].**

Colourless Painted beaker

UAT 002 (grab) Cemetery [BH ref no. 20]
Fragment, body. Colourless. Straight body with painting: Orange horizontal line, below yellow horizontal line. 5 green spots (abstracted leaf?), and 3 yellow spots (abstracted flower?). Below that orange horizontal line and yellow horizontal line. Dims: 25 x 35 T 2 EVE: 20 **[Fig. 44.13e].**

Colourless with facet-cutting

ZUL 007 Cemetery [BH ref no. 24]
Fragment, body. Colourless. Straight-sided, cylindrical vessel. Facet-cutting: Triple interlocking facet above horizontal line. Milky weathering. D *c.*40 Dims: 21 x 27 T 2 EVE 20 or 14 **[Fig. 44.13f].**

Colourless with abraded lines

Bottle with abraded lines and facet-cutting
GBD 001 Settlement [BH ref no. 26]
3 fragments, body (probably from the same vessel). Colourless. Straight-sided body, Cylindrical. Abraded pattern on body: Horizontal and vertical lines with round facets in the centre of the resulting squares. Dims: a) 25 x 42 T 1.5; b) 25 x 34 T 2; c) 29 x 31 T 2 **[Fig. 44.13g-i].**

Globular vessel with abraded lines
GSC 030 (grab) 'Royal' Cemetery
[BH ref no. 28]
Fragment, body. Colourless/greenish. Slightly curved body. Three horizontal lines above, 4 diagonal lines. No bubbles. Milky layer of weathering.
Dims: 32 x 43 T 1 EVE 20 **[Fig. 44.13j].**

Colourless with wheel-cut lines

Vessels with wheel-cut lines - not identifiable to shape
GSC 030 (grab) 'Royal' Cemetery [BH ref no. 31]
2 fragments (joining), body. Colourless. Two bands of wheel-cut lines. No bubbles. Matt surface. Dims: 37 x 39 T 1 EVE 20
GSC 030 (grab) 'Royal' Cemetery [BH ref no. 32]
Fragment, body. Colourless. One band of wheel-cut lines. No bubbles. Matt surface. Dims: 34 x 50 T 1 EVE 20
GER 001 (grab) Old Jarma [BH ref no. 33]
Fragment, body. Colourless. one band of wheel-cut lines. No bubbles. White layer of weathering. Dims: 14 x 17 T 1 EVE 20
GER 001 (grab) Old Jarma [BH ref no. 34]
Fragment, body. Colourless. Beaker, cup or bottle with wheel-cut lines and strong carination. Two wheel-cut lines above carination. Small bubbles? White layer of weathering. D 140 H(ext) 30 T 2 EVE:20

Other Colourless glass

Bowl with slightly flaring rim
Site unknown [BH ref no. 27]
5 fragments, 4 joining. Colourless. Outsplayed rim, cracked off and ground smooth. Thin band of abraded lines under the rim. No bubbles. White dots of weathering. D *c.*140 H(ext) 23 T 1 EVE 40

Cylindrical bottle
FJJ 006 (3) Cemetery [BH ref no. 41]
Fragment, body. Colourless. Cylindrical body with sharp bend, nearly forming right angle. Milky and brown layer of weathering. D(max) *c.*100 H(ext) 7 EVE 20 **[Fig. 44.13n].**

Beaker with cut-out fold under the rim
ZUL 007 Cemetery [BH ref no. 45]
10 fragments, 3 joining, probably all from the same vessel. Colourless. Straight fire-rounded rim with cut-out fold under the rim. Slightly conical body. Small bubbles. No weathering. D *c.* 80 H(ext) 21 T 1 EVE 20. **[Fig. 44.13q].**

Greenish Glass

Greenish with blobbed decoration
NSH 002 Cemetery [BH ref no. 57]
Fragment, body. Greenish with dark blue blob. Straight body with applied blob and thin wheel-cut line. Milky weathering. Dims: 18 x 21 T 1 EVE 14 or 20 **[Fig. 44.13m].**

Greenish cylindrical bottle with abraded lines
GSC 030 (grab) 'Royal' Cemetery [BH ref no. 59]
Fragment, body. Greenish. Cylindrical bottle. Straight-sided, cylindrical vessel. On the body abraded decoration: 2 horizontal lines, 5 diagonal lines and two further horizontal lines. D *c.*120 H(ext) 73 T 1.5 EVE 14 **[Fig. 44.13k].**

Greenish undecorated, slightly everted fire-rounded rim
FJJ 006 Cemetery [BH ref no. 61]
Fragment, rim. Greenish. Flask or jug. Slightly everted fire-rounded rim, globular body. No bubbles. Surface pitted. D 36 H(ext) 14 T 1 EVE 14 or 17? **[Fig. 44.13o].**

Bottles

Late Roman funnel-rim
Site unknown [BH ref no. 74]
Fragment, rim. Greenish. Complete everted funnel-rim, fire-rounded. Cylindrical neck. Rim chipped, but not sufficiently for missing handle attachment. Bottle. Applied trail under rim. Small bubbles. Milky layer of weathering. D(rim) 55-58 D(neck) 24 H(ext) 58 T 2.5 EVE 34 **[Fig. 44.13l].**

Base mark
GDB 001 Settlement [BH ref no. 76]
Fragment, base. Blue/green. Flat base with one raised circle. Heavily pitted surface. Dims: 13 x 13 H(ext) 4 T 2 EVE 14 **[Fig. 44.13p].**

GLASS OBJECTS FROM THE FP

By F. Cole and B. Hoffmann

The glass being dealt with here consists of probable bangles and pin or dropper fragments.

Glass has been used for adornment since Phoenician times, although bangles became popular in late Roman times and continued until the modern period. Today they are most commonly found in the sub-continent of India and Pakistan. The bangles here are all formed from a basic core of glass. Applied decoration consists of glass trailed to the surface, often remaining proud of the surface. Marvered decoration; again trailed onto the surface, and then rolled on hard surface until it becomes level with the original surface of the object. This can be repeated with different colours or layered on top on top of each other, or be dragged in different directions in a further stage of manipulation (SF 1411). The majority of the glass found has a pitted and/or eroded surface, rather than the more typical iridescent surface; this is a result of the scouring action of sand and salt on objects exposed to the elements. Much of this material was recovered following the unusually heavy rain in the winter of 1999.

The bangles SF 1465 and 1472 from sites near Jarma, as well as SF 2042 and 2039 from Old Jarma all belong to the Islamic period. Spaer (1992) originally attempted to classify the Islamic bangles from Palestine, and a large group of Mamluk glass bangles was reported by Carol Meyer from Quseir al-Qadim (Meyer 1993, 91ff.). Islamic bangles present a very varied group of material and this, depending on the cross-section of the bangle in combination with the decoration, makes it at least possible to date the bangles to within 300 years. According to Spaer's typology (Spaer 1992, Table 1-3) the following type attribution and date is suggested for some of the bangles found during the survey:

Table 44.4. Type and date attribution for glass bangles from FP survey.

SF No.	Location	Type	Date
1465	GER 015 (grab)	D3/4e(a)	Mamluk/Ottoman
1472	GER 016 (920)	D2(1)e(a)	Mamluk
2042	GER 001 (S of house 001.063)	D1(2)e(a)	Mainly Ottoman
2039	GER 001 (by SW corner of defences)	D1(2)e(a)	Mainly Ottoman

The plain turquoise/opaque blue/green bracelets SF 1471 and SF 2081 and 2140 are hard to date. Tatton-Brown (1994, 286, no. 61) reports on a blue/green bangle from Carthage, possibly from a 5th-century context. As the bangle is not illustrated it is hard to decide if this is similar to the fragments from GER 016 and Sāniat Jibrīl. Possibly also related may be a bracelet from Sardis (Saldern 1980, 91, pl. 16, no. 679), which is described as 'blue, with biconical cross-section'. The latter was found together with Byzantine vessels. Spaer (1992, 60) states, that in Palestine glass bangles only become common during the 3rd century AD. If the same holds true for Africa, then these bracelets from the Jarma area have to be a later Roman find, although too little is known about the Islamic bangles in the area to exclude a non-Roman date categorically.

Undecorated Bangles

ELH 005 (514) Bangle. SF 1095
L max. 10 T max. 3.5. Fragment. Cobalt blue, clear, veined with opaque white.
GER 001 (N of G1 – grab) Bangle. SF 2201
L max. 9 W max. 3 T max. 5. Fragment. Opaque turquoise spun glass.
GER 002 (S/SW of excav. - grab) Bangle. SF 2140
L max. 22 W max. 5 T max. 2.5 D 45. Fragment (62°). Turquoise veined with opaque white. Large air bubbles. Made of badly-fused glass, but not faience. Rectangular to oval section. **[Fig. 44.12k].**
GER 002 (grab – S of excav.) Bangle fragments. SF 2081
L max. 9 W max. 6 T max. 3. 2 joining fragments (36°). Rectangular section. Opaque lime green veined with some white lines. Some bubbles. **[Fig. 44.12j].**
GER 016 (925) Bangle. SF 1471
L max. 8 W max. 11 T max. 4. Fragment. Dark turquoise, opaque. Badly fused glass, but not faience. D-shaped profile. **[Fig. 44.12m].**

Decorated Bangles

GER 001.009 (outside SW defences - grab) Bangle. SF 2039
L max. 58 W max. 7. Fragment (80°). Very irregular bangle. Square sectioned dark brown core with applied decoration. Three bands, one twisted black and white, one opaque yellow and one opaque pale brown. Islamic. **[Fig. 44.12f].**
GER 001.063 (S of house – grab) Bangle. SF 2042
L max. 21 W max. 10.5 T max. 4 D (int) 54. Fragment (42°). D-shaped core in clear dark brown glass. Applied decoration, 4 lime green opaque lines. Islamic.
[Fig. 44.12i].
GER 002 (G14) Bangle? SF 1402
W max. 9 T max. 6.5 H max. 6 Fragment. Clear, colourless, marvered with opaque white and turquoise paste lines. **[Fig. 44.12l].**
GER 015 (grab) Bangle. SF 1465
W max. 9 T max. 7. Fragment. Rectangular section core in yellow green overlaid with opaque turquoise trail and S-twisted spirals of black/brown and white. Exterior scrim of opaque lemon. On the central turquoise trail an opaque yellow and green trail and an opaque white and brown trail are applied. Islamic. **[Fig. 44.12h].**
GER 016 (920) Bangle. SF 1472
L max. 4 W max. 6 T max. 3. Fragment. Clear rectangular colourless/greenish core. Applied paste decoration of yellow and dark turquoise S-twisted spirals overlaid with opaque pale jade green. Islamic. **[Fig. 44.12g].**
ZUL 007 Bangle. SF 2434
L max. 36 W max. 9 T max. 4. Fragment (20 degrees). Brown spun glass core. Applied decoration of two turquoise bands with twisted opaque yellow thread and one band of opaque lime green.
ZUL 010 Bangle. SF 2435
L max. 28 W max. 10 T max. 5. Fragment (15 degrees). Brown spun glass core. Applied decoration of four bands. Three are opaque yellow with twisted jade green thread, varying in thickness. One is a thick band of opaque green. Irregular, triangular cross-section.

The pins/droppers

One of the small round-headed objects from GER 002 (SF 2127) is best identified as a later Roman glass pin or kohl stick. African examples come from Cherchel (Shepherd 1995, 150, fig. 55, 61), Carthage (Tatton-Brown 1984, 209, fig. 69, 115) and Karanis (Harden 1936, 286, pl. 21, 860). The other two examples are broadly similar, though SF 1246 may be interpreted as a stirring rod.

GER 002 (grab) Pin or dropper. SF 2127
L max. 22.5 D max. 5.5 Fragment dark green translucent glass rod, heavily S-twisted, ending in round blob. Traces of spiral of white paste, spun then marvered to surface. **[Fig. 44.12n].**
GER 002 (G02) Pin or dropper. SF 1188
L 12 D max. 5 Fragment. End of green dropper or pin.
GER 002 (G09) Pin or dropper. SF 1246
L max. 16 D max. 4 Fragment. Green glass with marvered white paste spiral spun round.

Additional list of Faience and Glass Bangles from CMD survey

By B. Hoffmann

Faience Bangle

GER 001 (grab) [BH ref no. 11]
L 6 D *c.*45 D(int) *c.*40 T 2. Fragment (16°). Faience bangle. Rectangular section. Dark blue faience. No decoration. Cracks in the surface.

Glass Bangles

As far as it was possible to tell the transparent and translucent glass material contained elongated bubbles and some impurities. A few pieces are no longer attributable to a specific site, but are certainly part of the Fazzān collection and have been included here as 'Site unknown'.

Undecorated Bangle

Site unknown (CMD 1968) Glass bangle
L 12 D 74-76 D(int) 66 T 4-5. Fragment (106°).
D-shaped to triangular section. Dark brown translucent. Layer of weathering on the inside. Small bubbles, partly open on the surface.

Decorated Bangles

Site unknown (CMD 1968) Monochrome glass bangle with horizontal lines
L 12 D 58 D(int) 48 T 4.5. Fragment (60°)
Fragment. D-shaped section. Mid-blue opaque (due to large amounts of small bubbles). Horizontal lines on outside (may be traces of winding the bangle). Matt surface.

GER 001.065 Monochrome twisted glass bangle
Fragment. Glass bangle (possibly handle). Circular section, S-Twisted. Blue/green, translucent glass (due to small bubbles?). White layer of weathering in places. L 4 D *c.*70 D(int) *c.*60 T 5. 46°.

GER 001 (grab) Multicoloured glass bangle
Fragment. Glass bangle. Greenish rectangular base with three applied trails: S-twisted Opaque yellow and transparent blue/green; opaque light green and translucent blue/green and opaque yellow. Brown layer of weathering on the inside. L 5 D *c.*84 D(int) *c.*76 T 3. 42°.

GER 001 (grab) Multicoloured glass bangle
Fragment. Glass bangle. Brownish rectangular base with alternating applied bits of coloured glass (partly overlapping, but not twisted) in opaque light green, opaque yellow and opaque white. Brown layer of weathering on the inside. L 4 D 58 D(int) 52 T 3. 178°.

GER 001 (grab) Multicoloured glass bangle
Fragment. Glass bangle. Conical brown translucent base with central pattern of applied opaque yellow rectangular bits of glass and two opaque white stripes in a brown matrix. On the edges two thin opaque light green trails. L 5 D *c.*56-58 D(int) 42-44 T 4.5. 182°.

GER 001 (grab) Multicoloured glass bangle
Fragment. Glass bangle. Conical brown translucent base with 3 applied thread (Opaque light green (beginning and end visible), S-twisted opaque white and thin translucent brown, and opaque orange). Matt surface. Scratched. L 6 D *c.*84 D(int) 70 T 8. 124°.

GER 001 (grab) Multicoloured glass bangle
Fragment. Glass bangle. Blue/green rectangular base with applied light green opaque trail, upon which a S-twisted white and brown trail is applied. Layer of weathering on the blue/green glass. Pitted in places. L 6-8 D c 68 D(int) *c.*60 T 3-4. 30°

GER 001 (grab) Multicoloured glass bangle
Fragment. Glass bangle. Conical brown translucent base with three applied trails (opaque yellow, S-twisted opaque white and brown and opaque light green. White layer of weathering on brown glass. L 8 D *c.*70-80 D(int) *c.*60-70 T 6. 14°.

Site unknown. Multicoloured glass bangle
Fragment. Glass bangle. D-shaped blue/green base with 4 applied trails: three applied S-twisted opaque white and purple/brown trails, upon which one irregular opaque orange trail is applied. L 10 7 D *c.*68-70 D(int) *c.*62 T 5. 66°.

Site unknown (CMD 1968). Multicoloured glass bangle
Fragment of bangle. Conical brown translucent base with 3 applied trails: on the edges two S-twisted opaque white and brown trails, in the centre wide opaque light green trail. L 7 D *c.*64-68 D(int) 42 T 8. 186°.

Site unknown. Multicoloured glass bangle
Fragment. Glass bangle. Conical blue/green base with two applied thread (opaque yellow and opaque orange) on the outside. Matt appearance. No weathering. L 8 D *c.*70 D(int) 58 T 6. 58°.

ZIN 220 Glass bangle
Fragment. Glass bangle. Conical brown translucent base with two applied trails on the edges (opaque light green and opaque orange). Cracks and fissures through bangle. Reddish-white layer of weathering in places.
L 5 D *c.*90 D(int) *c.* 78 T 5. 76°.

STONE ARTEFACTS

By H. Parton

A total of 90 artefacts are presented in this report, including hand-held tools, mortars, querns, both saddle and rotary/oscillatory, and miscellaneous objects of worked stone. The largest category of objects is the grindstones with 80 in total. The majority of objects are made of the local sandstone from the Murzuq Formation. Four are not local, SF 2060 – a pestle of mica schist (Fig. 44.14), SF 2111 – an alabaster vessel, SF 2157 – worked granite and SF 2186 – a basalt rotary quern (Fig. 44.16). The alabaster and granite are not from Libya. The mica schist may have a source in NW Fazzān in the al-Ḥarūj al-Aswad region. The basalt could be from the Jabal as-Sūda or the Tripolitanian pre-desert near Bani Walid.

The hand-held tools include grinders, pounders, pestles, burnishers and sharpening tools. Many were dual purpose and in the catalogue the most prominent use wear is given first eg Grinder Pounder or Pounder Grinder. They are generally from harder, more quartzite layers within the sandstone. The two most significant are SF 2060 (from GER 027) a large pecked and polished

pestle of mica schist and SF 2409 (from ZIN002.013) a grinder pounder of sandstone. The latter has traces of an orange substance at one end, probably ochre or haematite. It also has a deep red mark just above the pounding surface – possibly to distinguish it from other pounders within the working area. Many grinders and mortars with traces of this orange/red substance have been found in the Jarma excavation. Three have been sent for analysis. A possible source for this material has been located south of the nearby town of al-Ghrayf in a deposit which is typical of the area. It is known that the Garamantians were using ochre pigments in their burial customs.

Of the five mortars recovered, SF 2217 is a possible mortar quern. This term has been created for a small group of objects from the Jarma excavations that formed a distinct group. They are a combination of a mortar, having a mortar hollow, and a quern, being large, flattish stones with smooth, worked, upper surfaces. Some are possibly unfinished rotary hand querns, and this may be the case with SF 2217.

Two fairly complete saddle querns were found, SF 2199 from site TAG 12, and SF 2446 from site TAB 031. These are both examples of a type that consists of a large, flat, oval to sub-rectangular stone. The grinding face is level, but slopes up slightly at the edge. Complete examples were seen in the local museum. In the report on the excavation at Jarma these querns are Type 3. The other examples from the survey in this group include fragments that may be of this type of quern, and others that are fragments of flattish stones, of no particular shape, that may have been used as grinding platforms. Hence the majority are queried in their identity as saddle querns.

The rotary/oscillatory hand querns are the largest group. Five are complete and these have been catalogued using a typology created in a recent study of the ground-stone from the Jarma excavations. A more detailed study of the regions querns and the full typology will be published with the main excavation report.

The typology is based essentially on the turning method. Two main types of turning socket occur; a notch cut into the grinding face and an egg-cup shaped hollow set in the side. Both would probably have been hand-holds but the latter would also work with an actual handle. In addition a few querns have an upright handle slot. The number and position of these turning sockets vary and this forms the basis for the typology.

The five complete querns from the survey actually represent a good range of types. SF 2170 is Type 2 which has two opposite turning sockets. SF 2171 is Type 6 with an upright handle socket. SF 2172 is Type 3 with two sockets on adjacent sides; and SF 2395 and SF 1236 are Type 5 with multiple sockets. The two most interesting are SF 2171 from GER 002 and SF 2025 from foggara 29 (FJJ 001). Both are Type 6, the least common.

At present, the dating of the querns is awaiting the results from the excavation, however, the survey examples can give us a broad range. SF 2046 from the cemetery site of ELH 002 has possibly been reused as a grave stele, which allows us to place these rotary/oscillatory querns within the Garamantian period. They continued to be used until recently, as SF 2443 from the abandoned oasis of Lake Mandara, shows.

Two other querns of importance are SF 2198 and SF 2379, of Type 9. These are lower grinding stones made from plaster with sandstone fragments set in the upper surface. At least three more examples were found during the excavation. This type shall be discussed in the excavation report.

The miscellaneous worked stone includes, inscriptions, grave stele and a weight.

The material from the survey has provided a good introduction to the ground-stone of the area, which should be extended with the future study and publication of the finds from the excavations in Jarma.

Each entry describes a single fragment/artefact unless stated otherwise. The material is sandstone unless otherwise stated. All measurements are in cm.

Abbreviations specific to the querns and mortars:

RHQ Rotary Hand Quern
SQ Saddle Quern
UGS Upper Grinding Stone
LGS Lower Grinding Stone
GF Grinding Face
UF Upper Face
LF Lower Face
HS Handle Socket
TH Turning Hollow
TN Turning Notch
NTM No Turning Method
CP Central Perforation
HG Hour-Glass
MH Mortar Hollow

Hand-Held Tools

EDU 020 Grinder Burnisher. SF 2342
L 6.5 W 6.2 T 4.0. Fragment. Two very smooth, polished surfaces. Remainder weathered and smooth.

EDU 026 Grinder Pounder. SF 2409
L 12.5 W 11.9 T 4.0. Almost complete. Sub-circular stone of elliptical section. One face; pecked in centre, very smooth edge. One face; chipped, with pecked edge, smooth centre.

EDU 030 Pestle Grinder. SF 2447
L 8.1 W 6.5 T 5.6. Almost complete. Faceted cone. Broad end; level, rough. Top slightly pecked. Two smooth faces.

ELH 006 (522) Grinder. SF 1077
L 9 W 8.4 T 5.5. Complete. Sub-oval plan, faceted

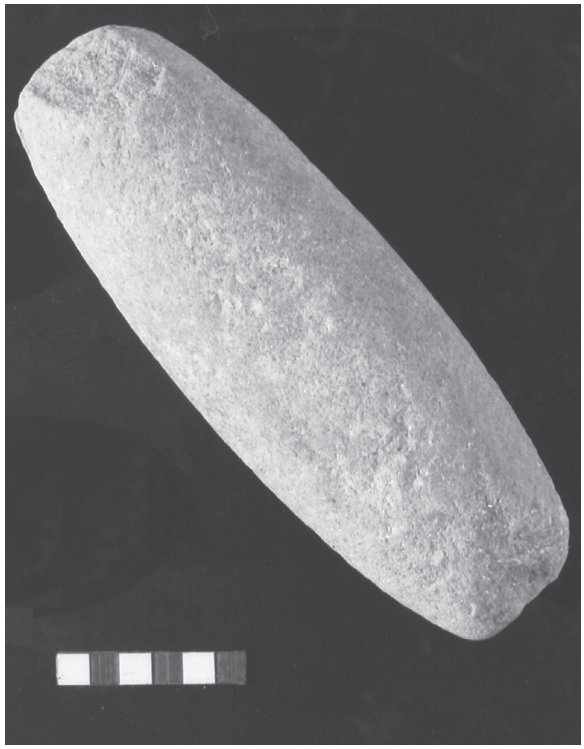


Figure 44.14. Stone pestle SF 2060 from GER 027.

domed section. One flattened surface, centre very smooth. Possibly a reused quern fragment.

FJJ 001 (F29) Grinder Pounder. SF 2024 A
L 11.6 W 10.3 T 4.4. Complete. Oval plan. One face; convex, uneven. One face slightly concave, smooth, polished with pecked centre.

FJJ 001 (F29) Pounder Grinder. SF 2024 B
L 9.2 W 9 T 4.5. 50%. Sub-circular plan. Intact surface; convex, uneven. One smooth area, several pecked.

FJJ 001 (F29) Grinder Pounder. SF 2024 C
L 13 W 5.7 T 5.3. 50%. Oval plan. One face; convex, fairly smooth. One face; very smooth, with pecked centre.

FJJ 001 (F29) Pounder Grinder . SF 2024 D
L 8.7 W 7.2 T 7.0. Complete. Irregular, rounded. Three pecked and two smooth surface areas.

GER 001 (G3 area - grab) Pounder Grinder. SF 2350
L 7.2 W 5.2 T 5.6. 75%. Barrel, oval section. Four pecked faces.

GER 001 (G3 area - grab) Pounder Grinder. Quartzite. SF 2351
L 8.8 W 8.3 T 6.5. Complete. Irregular, rounded. Three pecked and chipped surfaces. One polished area.

GER 002 (002) Pestle. Fossil wood. SF 1510
L 6.9 W 4.4 T max. 4.2 min. 3.0. Complete. Sub-rectangular, ends curved and pecked.

GER 002 (016) Sharpening Stone. SF 1527
L 5.2 W 3.2 T 4.0. Complete. Irregular, faceted cylinder. One end intact. Deep groove along one face, triangular – squared section. Interior surface slightly scratched.

Figure 44.15. Stone grinder pounder SF 2394 (top right) from ZIN 002/013, here photographed with a typical mortar from the FP Jarma excavations (SF 816).

GER 002 (grab) Grinder. SF 2194
L 6.6 W 5.7 T 5.1. Complete. Irregular plan, uneven domed faceted section. Two smooth surfaces.

GER 002 (grab) Burnisher Grinder. SF 2196
L 6.4 W 6 T 3.5. 75%. Almost complete; sub-square. One smooth surface, one very smooth, polished surface.

GER 002 (W of excav – grab) Grinder Pounder. SF 2233
L 6.2 W 4.5 T 4.8. Complete. Faceted barrel. Upper and lower faces fairly smooth, one area on side pecked.

GER 002 (N of excav. – grab) Grinder Pounder. SF 2230
L 8.4 W 7.4 T max. 4.5 min. 2.9. Complete. Sub-rectangular, edge slightly convex. One face very smooth. One edge slightly pecked.

GER 015 (grab) Grinder/Quern. SF 2053
L 6 W 4.8 T 3.9. Fragment. Irregular. One flat surface, smooth, polished. Possibly part of a quern.

GER 016 (938) Grinder/Quern. SF 1559
L 5.4 W 4.5 T 3.6. Fragment. One very smooth face. One edge very worn.

GER 027 (grab) Pestle / Grinder. Mica Schist. SF 2060
L 22.5 W max. 7.9 min. 4.5 T max. 6.8 min. 3.0. Complete. Cylindrical, ends tapered, oval section. Ends pecked, one side smooth, polished. [**Fig. 44.14].**

GER 031 (grab) Grinder? SF 2432
L 3.7 W 3.8 T 2.8. Fragment. One flat, smooth face. Possibly part of a grinder/quern.

GER 033 (A2) Grinder/Quern? SF 1564
L 7.3 W 7.2 T max. 3.0 min. 2.7. Two joining fragments. Conical plan. Edge; partially intact. Two flat very smooth faces.

SCH 020 Pounder Grinder. SF 2373
L 7.8 W 6.8 T 7.2. Complete. Oval plan; conical section. Several distinct pecked areas. Two smooth depressions on the sides which may be from handling or grinding.

SCH 020 Pounder. SF 2374
L 7.5 W 7.5 T 6.1. 75%. Slightly faceted sphere. Fairly worn. Slightly pecked in a few places.
SCH 020 Sharpening Stone. SF 2375
L 6.4 W 5.3 T 2 Groove L 0.9 W max. 0.3 min. 0.2. Complete? Rounded, flattened. Small groove cut into the edge, convex section, scratched interior. Both faces scratched.
TWE 029 (grab) Grinder Pounder. SF 2407
L 6 W 5.7 T 5.3. Complete. Irregular ovoid. Three very smooth surfaces, one slightly pecked surface.
ZIN 002.013 (Sample 2) Grinder Pounder. SF 2394
L 8.9 W 7.5 T 7.0. Complete. Hemispherical; oval plan, domed section. Base; very smooth, polished. Top; smooth with slight pecking. Lower edge; pecked with traces of ochre *in situ* at one end. Large red stripe just above the ochre – marker indicating usage of pounder? Sides smooth from handling. **[Fig. 44.15].**

The Mortars

ELH 003 (grab) Mortar SF 2026
L 13 W 14.3 T max. 6.6 min. 2.7 MH D 8.3 DP Appx. 3.0. Fragment. Edge; slightly convex. Base; level. UF concave, with smooth MH.
GER 001 (001.005) Mortar Quern? SF 2217
L 38 W 36 T max. 11 min. 5.5 hollow D 9.5 DP 1.8. Almost complete. Sub-circular, edge uneven. Base uneven, level to convex. UF slightly concave, very smooth, pecked. Hollow just off-centre, fairly smooth.
GER 001 (001.005) Mortar. SF 2219
L 40 W 33 Rim W max. 10 min. 4 MH D 20 preserved DP 7.4. Almost complete. Oval plan. Base level in centre, leading to convex edge, surface rough. Rim level, uneven, rough. Deep tapering MH, floor broken through, very smooth.
GER 002 (grab) Mortar. SF 2188
L 11 W 16.5 T max. 5.3 min. 3 D 8.6. 50%. Edge; convex. Base; level. Rim level, varying width. MH shallow, smooth.
GRA 002 Mortar. SF 2419
L 13 W 10 T 4.7 MH. D 3.5 DP 0.9. Complete. Fragment of worked stone. One face uneven. One face level, fairly smooth with a shallow, pecked MH. Possibly reused quern.

The Saddle Querns

EDU 016 SQ? SF 2347
L4.4 W4.2 T3.1 and L4.8 W4 T1.9. Two non-joining fragments, each with one smooth surface.
EDU 022 SQ? SF 2368
L 6 W max. 4.1 min. 1.2 T max. 1.2 min. 0.4. Fragment. Wedge shape. No edge intact. Both faces smooth, polished.
ELH 006 (grid 536) SQ? SF 1046
L 7.7 W 7.4 T 2.2. Fragment. Edge; convex. LF; uneven. GF; concave, very smooth.
GER 026 (grab) SQ? SF 2378
L 8.3 W 6.2 T 3.4. Fragment. One intact surface, uneven, smooth.
GER 027 (1006) SQ? SF 1569.
L 8.5 W 5.3 T 2.7. Fragment. No intact edge. One face; uneven. One face; smooth.
GER 030 SQ? SF 2377
3 non-joining fragments. Two T max. 2.6 one T max. 2.4 min. 1.4. Probably same object. One intact edge, convex. Two body fragments, with one very smooth face.
GER 031 (A1) SQ? SF 1556
T 1.6. Fragment. Two opposite faces intact, one very smooth with polish.
GER 031 (A2) SQ? SF 1561
Four fragments, two join. Three T 1.8 one T 1.6. All have one very smooth, flat face.
GER 031 (B2) SQ? SF 1560
L 5.8 W 3.5 T 3.0. Fragmentary, two joining. No edge intact. Two opposite faces intact, one flat, smooth.
GER 031 (B3) SQ? SF 1557
T 1.4. Fragment. Two opposite faces intact, one very smooth and polished.
GER 033 (A2) SQ? SF 1565
L 6.1 W 4.5 T 3.0. Fragment. Edge; convex, levelling off into base. GF; concave, very smooth.
GER 033 (A2) SQ? SF 1566
T 1.2. Fragment. One intact surface; flat, smooth.
GER 033 (A3) SQ? SF 1563
L 9.5 W 6.7 T 2.3. Fragmentary, two joining. Edge; convex. One face fractured. One face smooth, worn.
GER 033 (B3) SQ? SF 1567
L 6.1 W 3.8 T 1.8. Fragment. No edge intact. One face slightly concave, very smooth, polished.
GER 033 (C1) Quern? SF 1562
L 2.7 W 2.2 T 0.6. Flake. One flat very smooth, polished surface.
GSC 028 SQ? SF 2226
L 13.2 W 11.2 T max. 3.5 min. 2.7. Fragment. No edge intact. One face level. One face; sloping, smooth.
ITF 012 SQ? SF 2106
L 8.9 W 13.2 T max. 2.5 min. 0.9. Fragment. Edge; convex. Base; level,. GF; concave very smooth.
ITF 012 SQ? SF 2107
L 11.8 W 8.6 T max. 2.2 min. 1.9. Fragment. Edge; convex. Base; concave. GF concave, smooth.
MAR 010 SQ. SF 2391
L 3.2 W 2.8 T 1.2. Fragmentary, two joining. No edge intact. One flat face, very smooth, polished.
TAB 031 SQ. SF 2446
L max. preserved 16.3 W max. 24 T max. 3.9 min. 1.9. Fragmentary, two joining from each end, no joins between all four. Oval plan. Edge; slightly convex. Base; level, curving up at edge. GF concave in centre, convex at sides, level at ends.

Figure 44.16. Fragment of a basalt rotary quern, SF 2186, from GER 002.

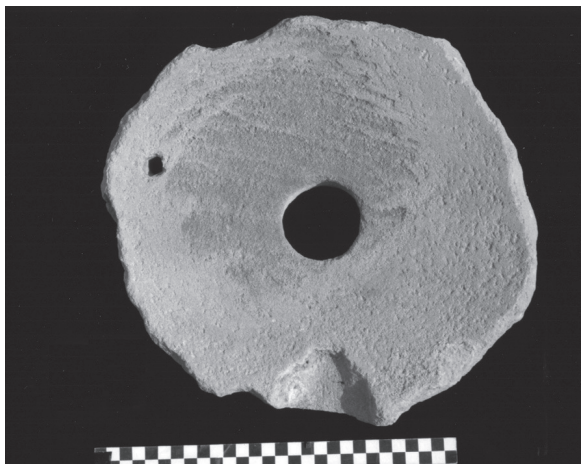


Figure 44.17. Upper grinding stone from rotary quern, SF 2171, from GER 002.

Figure 44.18. Upper grinding stone from rotary quern, SF 2170, from GER 027.

Figure 44.19. Fragment of rotary quern, SF 2198, from TEK 010, manufactured by setting broken fragments of old querns in a plaster matrix.

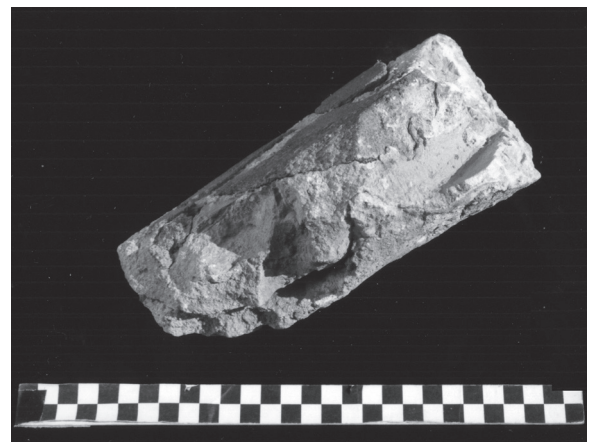


Figure 44.20. Cross section of SF 2198, the stone and plaster rotary lower grinding stone.

TAG 012 SQ. SF 2199
L 28.5 W 17 T max. 6.6 min. 3.0. Almost complete, three joining fragments. Sub-rectangular, rounded and convex ends. Omphalos base. GF concave, level at one end, rough, worn.

The Rotary Hand Querns

EDU 014 RHQ. NTM. SF 2443
L 21.5 W 12.5 T max. 7.9 min. 6.1 CP W max. 4.5 min. 3.4. 25%. Edge oblique – convex. One face level, one slightly concave, both smooth. CP oblique – HG profile, hole angled.
EDU 023 RHQ? SF 2371
L 15.5 W 4.3 T 4.5. Fragment. Edge convex. One face slightly concave, smooth, polished, possibly striated.
ELH 002 RHQ? UGS. SF 2046
L 30.5 W 16.5 T max. 10.5 CP W max. 4.4 min. 3.6 TN D 5.4 DP 5.2. 50%. UF convex, GF slightly concave, smooth. CP straight, uneven. TN smooth. Stone is very weathered. Reused as a stele (see below).

ELH 005 (510) RHQ? SF 1086
L 12.5 W 13 T max. 4.5 min. 3.0. Fragment. One face concave, smooth. One face worn. Possible CP.
ELH 005 (544) RHQ. UGS. SF 1064
L 17.3 W 11.3 T 4 TN L 6.3 W 3.5 DP 3.3. Fragment. UF and edge fractured. GF smooth, worn. No CP preserved.
ELH 006 (523) RHQ. NTM. SF 1043
L 23 W 16 T max. 5.8 min. 4.1 CP W max. 6 min. 4.7 hole 3.5. 25%. Edge; convex. Both faces concave, smooth, pecked. CP HG, one half longer, smooth.
ELH 006 (523) RHQ. UGS. SF 1044
L 17 W 14 T 7.3 TN L 5.2 W 5.1 DP 2.4 MH D 8.5 DP 1.9. Fragment. Edge and CP lost. UF level. GF smooth. TN smooth. Reuse as mortar, MH in lower face, smooth, pitted.
ELH 006 (523) RHQ. NTM. SF 1045
L 20.5 W CP-edge 13 T max. 6.6 min. 5.2 CP W max. 6.2 min. 3.0. Fragment. Edge; convex. One face slightly concave, another slightly convex, smooth pecked. CP HG, smooth.
ELH 006 (526) RHQ. UGS. SF 1063
L 13 W 8.9 T 7 MH W 8.0. Fragment. Edge; slightly convex. One face fractured. GF uneven, smooth. Section of TH set in side. Section of large, smooth hollow in lower face. Probable reuse as MH.
ELH 006 (536) RHQ. NTM. SF 1062
L 18 W CP-edge 13 T max. 6.2 min. 4 CP W max. 5.3 min. 4.1. Appx. 25%. Edge; slightly convex. Both faces concave, both smooth, pecked. CP concave, one half smooth.
ELH 008 (636) RHQ. NTM. SF 1100
L 15 W 12.5 T 6.3 CP W 4.5 MH D 7.5 DP 1.5. Fragment. No edge. One face level, slightly pecked. One concave, both smooth. CP profile lost, very smooth. Reuse as mortar, MH in convex face, pecked surface.
FJJ 001 (F29) RHQ. UGS. Type 6. SF 2025
L 19 W 10.7 T 6.6 CP W max. 6.3 min. 4.8 TH W 2.3 DP 3.2. Fragment. No edge. UF uneven. GF one section very smooth. CP HG, longer upper half. HS x 2. One is possibly an HG perforation, only part of the upper half remains. One is a hollow for an upright handle, very smooth.
GER 001 (001.005) RHQ. UGS. Type 5. SF 1236
L 30 W 28 T 11.2 CP lower L 6.1 W 5.7 centre L 1.6 W 1.3 upper D 6.2 TH x 2 D 7 DP 3.4 L 7.6 W 7.4 DP 4 TN L 7.2 W 6.5 DP 3.6. Complete. Oval plan. Edge convex, slightly chipped around the GF, smooth opposite HS. UF slightly convex, badly chipped, pecked, very smooth in one part. GF slightly concave, very smooth. Both faces have clear striations, those on the GF are more pronounced, shallow grooves around the perforation, thin scratches at the edge. CP HG longer upper half. TH set in one end and in one side, TN cuts into GF in opposite end. All smooth on upper interior.
GER 001 (001.005) RHQ Unfinished? SF 2218
L 41 W 38.5 T max. 10.3 min. 8.8 hollows x 2 L 9 W 8 DP 2 D 8 DP 1.6. Complete. Oval plan. Edge; convex, rough. One face concave, one face convex; both fairly rough, pecked. Hollow in each face, almost opposite, one rough, one fairly smooth.
GER 001 (grab) RHQ. NTM. SF 2227
L 41.5 W Appx. 34 T max. 10.3 min. 7.2 CP? W max. 8.3 D min. 6.7. 50%. Edge chipped. Both faces concave, very smooth with clear striations. Shallow rough hollow in centre of each face, no remains of a perforation in the section.
GER 001 (grab) RHQ. UGS. Type 5. SF 2395
L 33.5 W 32.5 T max. 8 min. 2 CP D max. 7.4 L min.7.2 W 6.5 hole L 3.7 W 3.4 TH L 6.1 W 5.1 DP 3.1 TN x 2 L 7 W 5.9 DP 3.2 L 7.3 W 5.1 DP 3.4 Complete. Sub-circular plan. Edge; convex – oblique, smooth. Both faces convex, one pecked, one smooth, no obvious striations. HS x 3 set in a row, a TN on either side of a TH. CP HG longer upper half.
GER 001 (by N wall – grab) RHQ. LGS. Type 9. Sandstone and plaster. SF 2379
L 13 W 11.4 T 5.6. 15%. Base convex. GF level, uneven, sloping up to edge. Five pieces of stone set in GF, some very smooth. Very clear striations, thin scratches in plaster near edge, deeper grooves towards centre.
GER 002 (014) RHQ. NTM. SF 1509
L 18.5 W 14.5 T max. 7.2 min. 5.8 CP W max. 6.7 min. 3.6. Fragment. Edge; convex. Both faces concave, both smooth. CP convex.
GER 002 (grab) RHQ. NTM. Basalt. SF 2186
L 19 W CP-edge 14 – 15 T max. 7.5 min. 6.8 CP W 4.5. Fragment. Edge; slightly convex. Both faces level, smooth. CP slightly convex, smooth polished, thin striations. **[Fig. 44.16].**
GER 002 (grab) RHQ. NTM. SF 2189
L 13.3 W CP-edge 12 T max. 8.4 min. 5.1. Fragment. Edge; vertical. One face worn, uneven. One face level, slightly pecked. CP slightly convex, smooth.
GER 002 (grab) RHQ. UGS. SF 2190
L 27 W CP-edge 14 T max. 8.6 min. 5.7 CP W max. 7.2 min. 4.4 TN W 5 DP 3.7. Appx. 25%. Edge oblique. UF concave. GF slightly concave, smooth, faint striations. CP convex.
GER 002 (grab) RHQ. UGS. SF 2191
L 23.5 W 14 T max. 10 min. 4.5 CP W max. 4.6 min. 2.7 TH L 5.8 W 5.2 DP 2.5 TN L 6.3 W 4 DP 3.4. Fragment. Edge and CP profile unknown. UF chipped. GF chipped, smooth, faint striations. TH and TN next to each other.
GER 002 (grab) RHQ. NTM. SF 2192
L 17.5 W CP-edge 9.5 – 11 T max. 6.9 min. 5.9 CP W 5.7. Fragment. One face convex, rough. One face level fairly smooth. CP vertical – oblique.
GER 002 (grab) RHQ. UGS. SF 2193
L 23 W 16.5 CP W 5 TH L 6.5 W 4.5 DP Appx. 3.1. Fragment. Edge convex. UF convex. GF flat, smooth, striated. TH set in side. CP convex.

GER 002 (grab) RHQ. NTM. SF 2197
L 18 W CP-edge 11 T 6.3 CP W max. 5.5 min. 4.5 MH L 9 W 8 DP 1. Fragment. Edge; slightly convex. One face level. One face slightly concave, smooth MH in centre. CP convex, wider at one end.
GER 002 (grab) RHQ. UGS. Type 6. SF 2171
L 35 W 31 T 5 CP D max. 8 min. 6 HS x 2 TH D 2 TN L 6.8 W 2.1 DP 4.8. Complete. Oval plan. Edge uneven. UF convex. GF concave, smooth, striated. CP appx. vertical, wider at top, smooth. TH an upright handle hollow, vertical profile, smooth, broken through quern. **[Fig. 44.17].**
GER 002 (grab) RHQ. UGS. Type 3. SF 2172
L 37 W 35 T max. 9.5 min. 6 CP L 8 W 7 TH x 2 L 7 W 4.5 DP 4.5 L 5.6 W 4.2 DP 2.7. Almost complete. Two joining halves. Edge appx. vertical. UF level, uneven – conglomerate layer. GF slightly concave, smooth. CP slightly convex, rough, striated. TH both set in side.
GER 016 (930) RHQ? Type 9? SF 1531
L 7.7 W 6.3 T 2.8. Fragment. No edge intact. One worked face, smooth, possibly striated.
GER 027 (grab) RHQ. UGS. Type 2. SF 2170
L 40 W 35 T 10 CP D 9 TH x 2 L 8 W 6 DP 7 L 7 W 5 DP 6.0. Almost complete. Sub-circular plan. Edge convex. UF convex, rough. GF level, very smooth, striated. CP vertical with circular grooves. 2 TH set in the side. **[Fig. 44.18].**
SCH 020 RHQ. UGS. SF 2423
L 32. 0 W 14 T max. 14 min. 4.3 CP W 8.1 TH D 6.4 DP 4.3. 50%. Two joining fragments. UF convex. GF concave, very smooth. CP HG worn. TH set in side. Second TH, probably a notch.
TEK 010 RHQ. LGS. Type 9. Sandstone and plaster. SF 2198
L 21 W 14.8 T max. 7.4 min. 5.5. 25%. Base convex, curving up into CP at centre. GF slightly concave. Eight stone pieces set in the GF, smooth. Very clear striations. Several layers of plaster visible in broken section, at least 4 in places. **[Figs 44.19-44.20].**

The Stone Vessels

GSC 008 Vessel. Alabaster. SF 2111
L 5.5 W 2.4 T 0.4. Body sherd, exterior surface very smooth, interior weathered. Diameter suggests bottle.

Miscellaneous Worked Stone

ELH 002 Stele. SF 2045
L 15 W max. 12.5 W min. 6.2 T max. 10.5 T min. 5.7. Elongated funerary stele, very weathered, tapering to one end.
GER 001 (S of Building 001) Inscription, Arabic? SF 2050
L 29.5 W 26 T max. 8.7 min. 7.6. Fragment. Roughly worked with two intact vertical – convex edges. Base level. Upper face level with part of an incised Arabic inscription. There are traces of a 2nd arabic text on the underside of the stone.
GER 001.003 (near Building 3) Worked Stone? Granite. SF 2157
L 6.7 W 5.2 T 2.0. Fragment. One edge possibly worked, smooth and flattened. Granitoid quartz, pale green with black speckles.
ITF 004 Inscription, Libyan . SF 2444
L 23.5 W 21.5 T max. 10.3 min. 7.0. Complete? Roughly shaped stone, base level. Worn inscription on upper face.
LAR 010 Carved Stele. SF 2445
L 27.5 W max. 14.8 min. 13.1 T max. 6.8 min. 2.4. Almost complete. Sub-rectangular plan, wedge section. Incised decoration on one face – large 'X' bordered by two concentric rectangles.
TEK 010 Weight? SF 2382
L 8.3 W 4.8 T 3.8 CP. W max. 2.9. 50%. Oval plan, edge convex, faces flat CP. HG smooth.

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- مرحلة ما قبل العصر الرعوي
- مرحلة العصر الرعوي المبكر
- مرحلة العصر الرعوي الوسيط
- مرحلة العصر الرعوي المتأخر .

الفصل 43 – الصناعات المعدنية والغير معدنية:

في جميع مراحل مشروع فزان الدراسي كنا قد صببنا اهتماما بصورة خاصة على بقايا الصناعات التي وجدت في عدد من المواقع بوادي الحياة (الآجال) المتمثلة في أنشطة لمصنوعات معدنية وغير معدنية بما فيها خطوات التقنية الحرارية ، وتم التعرف على ذلك من خلال المسوحات الميدانية إضافة إلى شواهد مهمة على بقايا من حديد عثر عليها في حفريات جرمة القديمة (GER 001) ، وقد تم وضع ملاحظات مبدئية على تلك المواد المكتشفة وإعداد تقرير شامل عن مكتشفات المسح ، وتجدر الإشارة إلى ان "تشارلز دانيلز" قد جمع كمية بسيطة من بقايا من معادن خلال أعماله الميدانية المبكرة بالمنطقة ولو أنها لم تخضع إلى تحليل مكتمل (دونت بعض الملاحظات الموجزة من أرشيف " تشارلز دانيلز" منفصلة و ألحقت بهذا التقرير)

وكان الهدف الرئيسي من ذلك هو دراسة الهوية الحقيقية لتلك المكتشفات ومعرفة مدى صحة كل المعلومات التي جمعت عن البعثات المختلفة والتي صنفت بشكل مبدئي على أساس أنها منصهرات معدنية ، كذلك التعرف على مدى ارتفاع شدة الحرارة التي استخدمت في تقنية صناعة المعادن ، وهذا الأمر تطلب إجراء مسوحات أثرية للمواقع التي يحتمل ان تحتوي على بقايا منصهرات تتبع نتائج ذلك بإخضاع العينات إلى تحاليل مخبرية ، وكمحصلة للتحاليل الدقيقة تمكننا من التعرف على نوعين من بقايا المصنوعات بوادي الحياة (الآجال) بقايا لمصنوعات معدنية وأخرى لمصنوعات غير معدنية .

الفصل 44 : **المكتشفات الصغيرة :**

في هذا الفصل تمت دراسة وتصنيف المصنوعات أدناه :

- العملة
- المصنوعات المعدنية (فضة مخلوطة، نحاس مخلوط، خليط معدني، حديد)
- خرز (خزف، زجاج، قشر بيض نعام، العقيق الأحمر، وغيرها من الحجارة)
- أدوات شحذ خرز ومصنوعات أخرى (جلد، ورق، خزف)
- آنية زجاجية: مواد زجاجية، مشابك، أسورة.
- أدوات حجرية استعملت في طحن الطعام .

ان معظم هذه المكتشفات تم جمعها خلال أعمال مشروع فزان الدراسي من عام 1997 وحتى عام 2001 ،في الوقت ذاته تم دراسة بعض اللقى التي جمعها (تشارلز دانيلز) ووضعت في كشف خاص (خرز زجاجي ، آنية ومواد زجاجية).

و بهذا الملخص نأمل أن نكون قد أعطينا القارئ فكرة عامة عن فحوى المجلد الثاني لآثار فزان.

الشكلية المتجانسة واشتراكها في نفس المادة الصناعية ووفرتها الظاهرة في زنككرة ، فإنه يمكننا القول وبكثير من الاطمئنان بأن هذه الأنواع تعود إلى ذروة استيطان زنككرة والتي أُرخَتْ بكربون 14 بالألفية الأولى قبل الميلاد .

كذلك نجد ان نوع 305 يظهر بوفرة في زنككرة ولكنه يظهر في الآن ذاته في مواقع أخرى (في المواقع التي عثر عليها أثناء تنفيذ مشروع فزان داخل الكثبان الرملية في بحر رمال اوباري) الأمر الذي يوحي بأن هذا النوع الفخاري يعود إلى فترة أقدم يمكن إرجاعها إلى منتصف المرحلة الرعوية واستمر في التداول حتى الألف الأول قبل الميلاد .

غير أننا لا نستطيع المبالغة في أهمية الأنواع الفخارية التي لها علاقة بإنسان المرحلة الرعوية والجرمنت ، ونذكر من بين الأنواع التي ترتبط بمنطقة زنككرة إبان الألفية الأولى قبل الميلاد (الأنواع 311 ، 315 – 317 ، 322 -326) ويمكن تأريخ الأنواع 333 – 340 والتي ظهرت في سانية جبريل (GER 002) إلى الفترة من القرن الأول إلى القرن الرابع للميلاد ، كما تظهر أنواع الدوكا " Doka" 341-343 في محيط يعود تاريخه من القرن الأول قبل الميلاد وحتى القرن الأول بعده ، بعد ذلك تجده يشيع تداوله خلال الفترة من القرن الثاني وحتى القرن الرابع بعد الميلاد وحتى العصور الوسطى ، ومن ضمن الفخار الذي عثر عليه أيضاً الأنواع 345-348 وهي تخص طباق مفتوحة بحافات بسيطة وكلها من نفس التاريخ باستثناء النوع 346 يعتري تاريخه الغموض بسبب المحيط الذي وجد فيه (GER 002)

أما الأنواع 349 – 360 فإنه بالإمكان ان نعيد تواريخها إلى العصر الحديث باعتبار العثور عليها في مستويات القرن التاسع عشر والعشرين أثناء حفريات مشروع فزان في الموقع GER 001

الفصل 42 – الأدوات الحجرية :

مصنوعات العصر البلايستوسيني ، في الوقت الذي لاحظنا فيه غياب الدليل على صناعة التشظية المبكرة ، تعرفنا على شواهد لأربع مراحل رئيسية لتطور تقنيات الصناعة إبان عصر البلايستوسين ، وهذا التقسيم يضم أي مصنوعات حجرية تلت العصور القديمة في عصر الهولوسين ، إذ أنه وكما يعتقد لم يحدث استغلال ذو أهمية للمنطقة قبل 10000 عشرة آلاف سنة مضت على الرغم من أن نقصان الجفاف قد بدأ من 14.000 (أربعة عشر ألف سنة قبل الوقت الحاضر) قبل الوقت الحاضر وتميزت تلك في مصنوعات الثقافات الآتية :

1- الثقافة الاشولية.
2- الثقافة الماوسيترية .
3- الثقافة العاتيرية.
4- ثقافة صناعة النصال .

مصنوعات العصر الهولوسيني :

هناك عدد من الاصطلاحات الخاصة بصناعات العصر الهولوسيني في الصحراء ، مما دعانا إلى تنسيب كل صناعات ما بعد العصر الحجري القديم إلى العصر الهولوسيني وقد توصلنا إلى بعض التعريفات المنطلقة من بعض الشواهد الضئيلة التي تم التعرف عليها من المسوحات الأثرية ، وترتب على تلك التعريفات فرز وتصنيف الأدوات الحجرية وتقنياتها ، لقد عثر على كميات كبيرة من مصنوعات العصر الهولوسيني من خلال المسوحات التي أجريت على المنطقة ولكن منهجية تلك المسوحات اختلفت ، الأمر الذي ينبغي اخذ هذا الاختلاف في الاعتبار عند تقييم أنشطة الإنسان إبان عصر الهولوسين .

ويذكر ان هناك نقص في الموالفة الفعالة بين العلاقات الزمنية والمكانية في مصنوعات أدوات الأنصال بالصحراء الكبرى ، فنأمل ان يتم التغلب على هذا النقص مستقبلا ، هذا وقد تم تصوير نموذج لأحد القطع المكتملة التي تم العثور عليها خلال المسوحات بالمنطقة ، ولكن تبقى المشكلة في الاصطلاح ، فمن الممكن ان تكون فخاريات ما بعد العصر الحجري القديم والعصر الحجري الوسيط ، ولكننا لا نجد العصر الحجري الحديث بدون فخاريات ، ونجد الرعاة في عصرهم استعملوا الفخار وبعضهم لم يستعمله ، غير أنه من خلال المسح وصلنا إلى ان مواد العصر الهولوسيني كانت من إنتاج الرعاة ، لذا تجنبنا إطلاق اصطلاح عصر حجري حديث الذي يتضمن الزراعة ويتماشى مع المصطلح المعتمد لدى المشروع الايطالي الليبي لدراسة المنطقة في مصطلح الرعوي (بتقسيمات جزئيه العصر الرعوي المبكر والوسيط والمتأخر) كذلك ليس من الممكن تنسيب بعض المواد إلى فترات تاريخ أقدم بأي صورة من الدقة لذا فإننا نحجم عن استعمال مصطلح مراحل الاكاكوس وننظر إلى مواد ما قبل عصر مرحلة الرعي على أساس أنها واحدة .

وعليه صار تقسيم مراحل عصر الهولوسين كما يلي :

لم تتوفر إلا بكميات بسيطة من بينها قطعة واحدة من نوع (keay 52) (نوع 35) إضافة إلى عدد آخر من الأنواع التي لم يتم تصنيفها ولو أنها ترجح من الأنواع (37-43) المتأخرة ، ومثلها مثل أنواع الفخار المصقول (531-4) – الفخار الطرابلسي ذو الطبقة الحمراء) – ويحتمل ان تكون كميات الامفورات المتأخرة والتي لم تدرس بسبب تأخر التعرف عليها عن دراسة المجموعات الفخارية الأخرى (عام 2000) غير متوفرة بشكل كبير .

الفخار الخشن:

بصرف النظر ان أنواع الطباق المختلفة يمكننا القول بأن الأنواع التي تم التعرف عليها من الفخار الخشن كانت قليلة في مجموعاتها ، ومن هنا فإننا سنتطرق إلى الأنواع المميزة فقط .

لقد تمت الإشارة إلى الأنواع (101-106) في حديثنا عن المواد المبكرة ، وقد لاحظنا وجود مثيل لها من الفخار البونيقي المتأخر في صبراتة وقرطاج فيما نجد نظائر لنوع 107 متمثلة في سلسلة آنية رومانية مبكرة عثر عليها في عدد كبير من مواقع البحر الأبيض المتوسط . أما النوع 108 فقد واجهتنا بعض العثرات في تأريخه ، ذلك أنه من حيث الصناعة هو نفس صناعة الأنواع (101-103) ولكن هناك نماذج (أهمها رقم 3961) يظهر تشابه شكله مع آنية رومانية مبكرة ولهذا السبب أرجعنا تأريخه إلى ما بعد تاريخ الأنواع 101-103 بزمن قليل أي القرن الأول قبل الميلاد والقرن الميلادي الأول.

الأنواع 114 و 114.1

ان الأنواع 114 و 114.1 معروفة بأنها أنتجت في أفران ليبتيمينوس Leptiminus في تونس ، وان الأنواع 143-145 معروفة في صبراتة وفي مناطق ما دون الصحراء بمنطقة طرابلس ، وبمكيات كبيرة خصوصا النوعين 143 و 144 ، وهذا التواجد أو التوزيع يوحي بأن تلك النوعيات من صنع منطقة طرابلس مع احتمال ان الإنتاج قد تم في مركز أو مراكز مختلفة عن تلك التي تم فيها إنتاج الفخار الطرابلسي ذو الطبقة الحمراء وذلك بحكم اختلاف المادة الصناعية لتلك الآنية عن مادية صنع الفخار الطرابلسي المذكور .

أما أنواع الكسرولات (ضرب من الطباق الفخارية) التي عثر عليها في هذه المنطقة فهي تتشابه بشكل كبير مع كسرولات صبراتة ومنطقة ما دون الصحراء بطرابلس وهي أنواع شاع استعمالها إبان الفترة من القرن الأول قبل الميلاد وحتى أواخر القرن الثاني ومطلع القرن الثالث بعد ميلاد المسيح ، ويلاحظ سيطرة الأنواع ذات المنشأ الطرابلسي ووسط تونس مع تواجد أنواع من شمال تونس تمثلت في (النوعين 176-177) وتجدر الإشارة إلى ان نوع 178 وهو النوع السائد في قورينائية قد عثر عليه في منطقة ما دون الصحراء الليبية (أودية منطقة طرابلس وأبو نجيم) ولكن لم يظهر على حد علمنا في صبراتة ، الأمر الذي يؤكد ان طرق انتشاره كانت عن طريق البر وليس عن طريق البحر ويذكر أنه ثمة هناك إشارات بخصوص الجرمنت وردت في الكتابات المدونة على شقاف بو نجيم .

هذا وان الطبقات الرومانية المبكرة والمتوسطة في سانية جبريل (GER 002) يسيطر عليها نوعان رئيسيان من طباق الكسرولات العميقة أو القصاع : فالأول المتمثل في (الأنواع 180-186) لم يتم تمييزه نسبيا ولكن النوع الثاني فله جدران بأضلع أفقية على مسافات متوازية على نحو متساوي (نوع 179) ، ويذكر أنه لم يتم التعرف على مثيل لهذا النوع خارج المنطقة ومن خلال مادة صنعه يمكننا القول أنه صنع وأنتج محليا. ولو أنه شاع استعماله في منطقة ما دون الصحراء خلال منتصف وأواخر العهد الروماني وله تشابه في صنعه مع الفخار الطرابلسي ذو الطبقة الحمراء .

وهناك عدة نماذج من بين الأباريق والآنية المختلفة يجدر ذكرها ، من بينها الإبريق أو الكأس الصغير نوع 204 الشائع التواجد في المواقع الساحلية بمنطقة تونس وطرابلس وكذلك في منطقة ما دون الصحراء خصوصا بين الأثاث الجنائزي ، كما ان الكأس ذو القاعدة نوع 216 يستحق التنويه إليه ، إذ تم إنتاجه محليا وهذا ما يبدو فعلا فإنه بالإمكان اعتباره مؤشر على تأثير صناعة الفخار المصقول الروماني في الصناعات المحلية من حيث الزخرفة والشكل ، هذا ويذكر ان مجموعة من الأباريق التي تعود إلى أواخر العهد البونيقي ومطلع العهد الروماني قد تمثلت في الأنواع 218-220 ، وجميعها عثر على مثيلات لها في صبراتة ومنطقة ما دون الصحراء .

الفخار المصنوع يدويا :

تغطي مجموعات الفخار المصنوع يدويا فترة طويلة من الزمن ابتداء من بداية العصر الهولوسيني إلى وقتنا الحاضر ، وقد تعرفنا على مدى تاريخي لهذه المجموعات من خلال الأعمال الميدانية (لتشارلز دانيلز) والحفريات التي أجريت في موقع زنككرة (باستثناء مناطق الدفن على المنحدرات الدنيا والتي تتزامن مع فترة العهد الروماني في تاريخها) وجميع تلك التواريخ تخص مصنوعات تعود إلى الألف الأول قبل الميلاد ، ويمكن إجمالها في سبعة أنواع تخص موقع زنككرة هي الأنواع 301-304 و 307 و 308 و 310 وبالنظر إلى خصائصها

يعود أول الفخار المبكر المستورد في المنطقة -وهو مصنوع بالعجلة – إلى القرون الثلاثة الأخيرة من الألفية الأولى قبل الميلاد ، والأنواع الرئيسية لهذا الفخار المستورد تتمثل في نوع الامفورا والصحاف الكبيرة المصنوعة من الفخار الخشن وهي عادة تنسب إلى النوع البونيقي 1-5.1 و 101-106 والامفورات الإغريق – ايطالية (نوع 10) وامفورات دريسل Dressel 1A (نوعا 11 و 12) وإناء هلسنتي – لاغينوس lagynos ذو الأرضية البيضاء (نوع 507) وسلسلة من الصحاف الصغيرة من مصنوعات Black Glass أنواع (501 – 506)

ومن الأنواع البونيقية المتأخرة يجدر بنا ذكر ان جزء كبير من تلك الأنواع جاء من موقع واحد ألا وهو تيندا ، حيث عثر على 75% من امفورات أنواع (1-1. 5) و 68% من نوعيات الفخار الخشن (101-106) في هذا الموقع ، بل الأهم من ذلك ان 94% من الأنواع 101-103 وهي معظمها بونيقية تتشابه مع قطع الفخار البونيقي المتأخر الموجود في صبراتة .

ولا تفوتنا الإشارة إلى الإناء الهلسنتي لاغينوس Lagynos ذو الأرضية البيضاء نوع (507) السالف الذكر ، فهذا الإناء له أهمية خاصة فبزخرفته المطلية يضاهي كثيرا آنية الاغورا بأثينا ، ويمكن تأريخ هذه القطعة بالفترة الواقعة بين 150 قبل الميلاد و 50 ق.م تقريبا ، وحتى الوقت الحاضر وعلى حد علم معدو هذا المعجم تعد هذه القطعة الوحيدة من نوعها التي عثر عليها في منطقة وادي الحياة (الآجال) هذا وان القبر الذي عثر محمد سليمان أيوب فيه على هذه القطعة (GER,011,A2,1) قد ضم الكثير من القطع ذات التاريخ المتأخر ، مما يعني ان وقت الدفن كانت تلك القطعة من الموروثات المقدسة التي انتقلت إلى الميت صاحب القبر من آباءه وأجداده .

الفخار المصقول :

فيما يتعلق ببقية الفخار المصقول المدون بهذا المعجم هناك تباين لا يمكن تجاهله ناجم عن الكميات الكبيرة من المواد المكتشفة من مقبرة GER 011 (سانية بن هويدي) إذ ان 73% من الفخار المصقول الوارد في هذا المعجم من موقع GER 011 وتشكل السيجيلات الايطالية منه 58% ، ومن هذه النسبة نجد 65% من النوع (515) ويلاحظ من خلال الأختام التي على هذه القطع أنه من مصانع ايطالية وتحديدا من منطقة بيزا ، كما يلاحظ ان عدد القطع التي تحمل الأختام المربعة أو الأختام الشبه مربعة ماهي إلا إشارة إلى ان معظم هذه النوعية قد جاءت إلى المنطقة كشحنة واحدة وفي مناسبة واحدة.

والى جانب السيجيلاتا الايطالية هناك عدد قليل من فخار السيجيلاتا الشرقية A (أنواع 508-510) وسيجيلاتا جنوب بلاد الغال (نوع 516) إضافة إلى قطعة واحدة لصحن من الفخار المصقول (نوع 517) يبدو أنه من أصل ايطالي .

وتتمثل بقية الفخار المصقول الواردة في هذا المعجم في النوع الإفريقي ذو الطبقة الحمراء (African Red Slip Ware) (أنواع 518-530) ومثيله الطرابلسي Tripolitania Red Slip Ware (أنواع 531-534) والتي تغطي الفترة من أواخر القرن الأول بعد الميلاد وحتى القرن السادس للميلاد .

الامفورات :

يلاحظ ان 28% من الامفورات الواردة في هذا المعجم من أصل طرابلسي (الأنواع 15-22) من النوع البونيقي المتأخر (أنواع 1-5.1) على أرجح الأحوال ، علاوة على بعض القطع من نوع الإغريق ايطالي (نوع 10) والنوع الروماني الأوسط (نوع 26) وإذا جمعت هذه الأنواع مع بعضها البعض قد ترفع النسبة إلى 36% أو على الأقل 35% من مجموع الفخار (وعليها نماذج مكتملة أو شبه مكتملة) عثر عليها في مقبرة سانية بن هويدي (GER 011) .

من ناحية أخرى يذكر ان معيار صناعة الأنواع 15 و 16 و 19 لم يكن راقيا بصورة كبيرة فهناك عدد من القطع تؤكد بأنها تعرضت لحرق فوق اللازم الأمر الذي أدى إلى حدوث تشويه في حوافها ، وهناك نموذج واحد يجسد مزيج فخاري مسرب للسوائل ناجم عن حرق زائد ، مما أدى إلى تشويهه وهذه النوعيات ليست متواجدة بصورة كافية للإشارة إلى أنها من صنع محلي ، بل أنها تنوه إلى ان بعض الصناعات الفخارية الشبه متقنة كانت تستعمل ، وفي العادة يرجح أن الأنواع 15-22 كانت تستخدم في نقل الزيوت رغم الدليل على ذلك من المستبعد تأكيده ، فصغر حجم هذه النوعيات من الأوعية لا توحي باستخدامها لهذا الغرض فمن المرجح أنها كانت تستخدم لحفظ سوائل ذات أهمية اكبر من حيث وحدة الموازين ، ومن هنا نرجح ان يكون شراب الخمر هو السائل المحتمل حفظه في مثل تلك الجرار .

وكان الفخار المسيطر في أعقاب منتصف العهد الروماني الأنواع 21-29 وهي في الأعم من منطقة طرابلس أصلا مع عدد بسيط جاء من تونس فيما يبقى عدد أنواع الامفورات إلي تعود إلى أواخر العهد الروماني قليلة حسبما عثر عليه إلى حد الآن في المنطقة ، إذ لاحظنا ان الامفورات الرومانية المتأخرة 1-4 (الأنواع 31-4)

تمكن (تشارلز دانيلز) من الحصول على بعض التواريخ عن طريق الكربون الإشعاعي خلال عمله في موقع (زنككرة) كاشفا بعض الضوء عن تواريخ عدد من المواقع من خلال حفريات محدودة افتقرت إلى تسلسل مكتمل للفخاريات ، من ناحية أخرى أسفرت أعمال مشروع فزان عن اكتشاف كميات من العينات العضوية (معظمها أخشاب وبذور متفحمة) وذلك من خلال أعمال التنقيب والمسح في مجموعة من المباني التي شملها المشروع المذكور ، حيث تركزت الحفريات في منطقة جرمة بالحفر على أعماق طبقية متسلسلة امتدت من القرون المتأخرة التي سبقت الميلاد وحتى مطلع القرن العشرين لمعرفة تاريخ عاصمة مملكة الصحراء الجرمنتية (500 سنة ق. م وحتى 500 م) وما تلاها من نشاط مورس بذات الموقع إبان العصور الوسطى ، وهذا الفصل من المعجم يتطرق إلى تواريخ بالكربون الإشعاعي شاملا بعض التعليقات ذات الأهمية التاريخية وقد حصلنا على ما يزيد عن 75 تاريخا في هذا الجزء من فزان .

هذا وتم تقسيم النتائج إلى أربع مجموعات رئيسية :

المجموعة الأولى: وتشمل عدة تواريخ تخص الاستيطان الجرمنتي المبكر على الجبل في زنككرة وتيندا.

المجموعة الثانية : وشملت تواريخ لعينات من مباني محددة لا تزال قائمة في جرمة القديمة (GER 001) وهي تخص جرمة العصور الوسطى التي تقع على أنقاض جرمة عاصمة الجرمنت ، حيث تم اخذ عينات من عدد من المباني الرئيسية للاستعانة بها في ملء التسلسل التاريخي لجرمة فيما بعد الجرمنت .

المجموعة الثالثة : وهي تخص عينات التقطت من مسوحات واسعة شملت أودية الحياة (الآجال) برجوج وعتبة والكثير منها يتعلق بمباني القصور والتي ترجح ان تكون من العصر الإسلامي ولو ان بعضها اثبت بأنه كان موقعا جرمنتيا في الأصل .

المجموعة الرابعة : وهي تواريخ أخذت من تسلسل طبقي لحفريات أجريت في جرمة نفسها أسفرت عن ربط تواصل تاريخي لعشر مراحل من البناء .

الفصل 41 : أنواع الفخار :

تعد هذه أول محاولة لوضع سلسلة كاملة لأنواع الفخار في منطقة الصحراء الكبرى شاملة كل من الفخار المستورد والمحلي المصنع في عدة بقاع وعلى مدى فترات زمنية طويلة ، وتجدر الإشارة هنا إلى ان البقايا الفخارية التي تشكل قاعدة هذه الدراسة جاءت من عمل تشارلز دانيلز ومن مشروع فزان ، وكانت معظم فخاريات (دانيلز) قد جاءت من حفرياته في زنككرة وتندا وسانية جبريل وسانية بن هويدي أضفنا إليها بعض من الفخار الذي اكتشف أثناء بعض المسوحات الأخرى ، وفيما بين سنتي 1997 و 2001ف قام منفذو مشروع فزان بمسح ميداني منظم في عدد من المناطق تم ضم مكتشفات هذا المسح إلى مكتشفات (دانيلز) ، ويذكر أنه لم يتم تضمين كل مكتشفات مشروع فزان الفخارية هذا التصنيف المبدئي إذ لا تزال أعمال البحث فيما بعد التنقيب مستمرة .

تصنيف الفخار:

لقد تم تحديد ماهية الأنواع على أساس الشكل المعياري للفخاريات وتنقسم القطع الفخارية إلى أربع أصناف رئيسية ، ويذكر أنه خلال تنفيذ مواسم مشروع فزان تم التقاط مجموعة من القطع الفخارية المصنوعة يدويا إبان العصر الحجري الوسيط والعصر الحجري الحديث (مرحلة الرعاة) وذلك من عدة مواقع وقد تم دمج هذه القطع ضمن الأنواع الرئيسية الأربعة والتي لا تبتعد في تباينها بعضها عن بعض .

التقسيمات الفخارية:

الفخار المبكر : يعود أول الفخار المبكر الذي اكتشف أثناء أعمال (دانيلز) وأعمال مشروع فزان إلى العصر الحجري الوسيط والعصر الحجري الحديث كما سبق وان تقدم، وهو عبارة عن أعداد من كسر جدار البدن عليها (نقاط سطرت في خطوط متوجة) كنوع من الزخرفة المحززة ومثالنا على ذلك كسرة من موقع TWE 021 وكسرة أخرى عليها زخرفة مضغوطة من موقع GRA002، وهذان الموقعان عبارة عن مستوطنتين فوق الحافة الجبلية كانتا في الأصل حصنان جرمنتيان ، وهذه الكسر الفخارية تشير إلى مدى قدم استغلال هذين الموقعين وبصورة لم نكن نعرفها من قبل ، كما أنه تم التعرف على فخاريات من منتصف المرحلة الرعوية ، وذلك من خلال اكتشاف كسر بين مصنوعات حجرية من العصر الهولوسيني وجدت مبعثرة على شطآن بحيرات قديمة تلاشت منذ أزمنة سحيقة كانت تتواجد في بحر الرمال (مثل موقع GER 033)

الفخار المستورد القديم:

في كل منطقة تم التنويه إليها في الملاحظات الاستهلالية في كل فصل ، مع الإشارة إلى السكان المحليين وأشجار النخيل التي تم تدوينها في الثلاثينات زمن الطليان من القرن الماضي .

ويذكر ان المواقع المستغلة في زمن ما قبل الجرمنتيين قد تمت الإشارة إليها تحت اسم (استغلال – حجارة مبعثرة – كهف)

الصفوف الحجرية :

ويعنى بها صفوف من الحجارة رتبت على سطح الأرض وغير معروفة الأهمية والوظيفة .

حجارة الصيد :

في الوقت الذي لم يعثر حتى يومنا هذا على هذا النوع من الحجارة في أرجاء وادي الحياة (الآجال) يلاحظ تواجدها بأعداد كبيرة في مناطق أمساك زطافت ووادي اروان غرب اوباري .

المستوطنة الحديثة :

يلاحظ ان معظم مواقع الاستيطان الجرمنتية والإسلامية وحتى تلك التي تعود إلى العصر الحديث هي عبارة عن قرى لا غير ، ولكن هناك عدد من المواقع ذات حجم اكبر تستحق ان تصنف تحت تصنيف مستوطنة حديثة .

الأسوار :

في القليل من المواقع عثر على مسارات لأسوار كانت على ما يبدو ذات صبغة دفاعية أو تحكمية ، إذ لاحظنا وجود بعض الأسوار ذات صبغة دفاعية حول المواقع مثل (ZIN900) فيما يبدو البعض الآخر أنها شيدت في نقاط معينة لمراقبة أو التحكم في المواقع الضيقة الرابطة بين المنحدر وبحر الرمال على طول وادي الحياة (الآجال) مثل المواقع (FUG16, TEK008) .

الآبار :

تعد الآبار من مميزات زراعة البيئات الصحراوية ، وتغير مورفولوجية الآبار وتقنيتها تعتبر مؤشرات مهمة في العديد من التغيرات مثل المناخية وغيرها .

التأريخ :

تظل مسألة تأريخ المواقع والمكتشفات في هذا المعجم على مستوى التقدير والتخمين في أفضل الأحوال، لقد حاولنا وضع تواريخ تقديرية من خلال سلسلة من الشواهد ... من المكتشفات التي تم جمعها، و السجلات المدونة، و التشخيص المعماري، و المميزات الفنية والمعمارية ، تماثل خصائص معمارية من مناطق أخرى معروفة التاريخ. من ناحية أخرى تمت الإشارة إلى الفترات التاريخية الطويلة كل في مكانه بصورة مختصرة مثل PAL وتشير إلى العصر الحجري القديم و PAST وتعني المرحلة الرعوية .

تنظيم هذا المعجم :

كما أسلفنا لقد تم ترتيب هذا المعجم على أساس 39 فصلا تغطي منطقة وادي الحياة (الآجال) وما يحيط بها من مناطق ناحية الجنوب والشمال الشرقي ، دون التعرض لمواقع جنوب غرب فزان ، مثل وادي تانزوفت والمنطقة المحيطة بغات حوالي 350-400 كلم جنوب غرب جرمة ، المعروفة بوفرة بقايا وشواهد عصور ما قبل التاريخ والفترة الجرمنتية وهي حاليا مركز دراسة لبعثة ايطالية. لقد تم تقسيم وادي الحياة (الآجال) إلى 26 منطقة وهي تقسيمات (تشارلز دانيلز) في الأصل من موقع تندا وحتى موقع الأبيض ، والى جانب هذه التقسيمات قمنا بإضافة تقسيمات أخرى لتغطي المناطق التالية :

أ) منطقة وادي اروان التي تقع غرب اوباري مباشرة حيث تم جمع معلومات جديدة في السنوات الأخيرة عن ماضي المنطقة .

ب) مواقع جنوب وشرق وادي الحياة (الآجال) بما فيها وادي برجوج ووادي الناشو ووادي عتبة ومنخفض الحفرة حول مرزق بل شملت حتى بعض المواقع حول زويلة.

ج) مواقع شمال وادي الحياة (الآجال) في وادي الشاطئ ورملة اوباري ، وقد تم إلحاق خريطة بكل جزء في هذا المعجم مبين عليها مكان كل موقع .

الفصل 40 : التأريخ بالكربون الإشعاعي و القياس المتر إشعاعي

الاهرامات : انظر المقابر .

المحاجر :

موضع يشمل دليل على نشاط قديم لاقتلاع حجارة البناء مثل علامات الفؤوس وآثار القطع على الواجهات الصخرية .... الخ.

قصر - قصور :

وتضم المواقع المحصنة، وهي تتباين في أحجامها من أبراج بسيطة إلى حصون رئيسية، ويشار إليها في العربية قصور (جمع قصر) ، وبالنظر إلى الاختلاف الكبير فيما بينها تاريخيا وإنشائيا فإن هذا الصنف من الإنشاءات وضع تحت تعريف فضفاض .

الفن الصخري:

ويشمل التصاميم المنقورة أو المسننة أو المحززة ،علما بأن الرسوم لم تعش في هذه المنطقة ، إذ أنه من الأرجح أنه تم استعمال الرسوم في هذه المنطقة بالصورة التي كانت عليها الرسومات والنقوش في الاكاكوس ويمكن تعريف بصورة موجزة أساليب الفنون الصخرية السائدة في المنطقة يومئذ على النحو التالي :

1- أسلوب عصر الحيوانات العظيمة المتوحشة حوالي (7000-4500 قبل الوقت الحاضر) ويتميز هذا العصر بتصوير حيوان الفيل الإفريقي القديم (بوبالوس) وغيرها من الحيوانات المتوحشة مثل الفيل ، الزرافة ، وفرس النهر ، والتماسيح والأرخص والظباء، ومناظر هذا الأسلوب عادة كبيرة بحجم طبيعي لحيوانات جسمت بخطوط محززة عميقة على سطح الصخر المنعم وتشمل هذه المناظر حتى التفاصيل بما فيها الأعضاء الحسية .

2- أسلوب عصر الماشية **(حوالي** 6000-**3000 قبل الوقت الحاضر)** ، تم استئناس الماشية خلال العصر الحجري الحديث المطير أي حوالي آلاف السادسة قبل الوقت الحاضر وقد جسدت تلك الحيوانات بشكل موسع في الفن الصخري، ويبدو أن هذا الأسلوب قد استمر حتى مع بداية عصر الجفاف عندما شرع رعاة الماشية في التكيف مع الأوضاع المناخية الجديدة .

3- عصر التازيتا حوالي 5000 – 2800 قبل الوقت الحاضر ، ويجسد هذا العصر أسلوب وحيد متميز تطور في بعض المناطق الصحراوية ، ويبدو أنه يعود إلى أواخر المرحلة الرعوية في أعقاب التغير المناخي الكبير الذي وقع في حوالي 5000 سنة قبل الوقت الحاضر ، وقد تميز أسلوب التازينا بنقوش لحيوانات متوحشة ومستأنسة ذات تحزيزات عميقة صقيلة الأبعاد ، وبأسلوبها التخطيطي المتمثل في الأطراف المستدقة للحيوانات ، ويلاحظ في هذا الأسلوب وجود حيوانات مثل الضب وبقر الوحش والماعز شائعة في ذلك الزمن مع غياب بعض الحيوانات التي صورتها نقوش العصور السابقة ، الأمر الذي يوحي بتغير البيئة إلى وضعية أكثر جفافا كما ان الرسم التجريدي في هذه المرحلة قد شاع بصورة خاصة .

4- مرحلة الحصان الألفية الثالثة والألفية الثانية قبل الوقت الحاضر : وتجسد هذه المرحلة ظهور الخيول بمستعمليها غالبا ،حيث صارت ظاهرة خاصة في العديد من مناطق الصحراء بما فيها منطقة فزان ، ونقوش هذه المرحلة تمثلت في تصاميم تخطيطية وهندسية وبأشكال أدمية أحيانا مصورة على هيئة مثلث مزدوج يعلوه خط أو دائرة يمثل الرأس ، وتظهر في ذلك الزمن ولأول مرة صور لعربات بعجلتين أو بأربعة عجلات وهي تنسب في العادة إلى الجرمنتيين ، ومن بين مناظر تلك المرحلة أشكال آدمية تلوح بأسلحتها ، أو تمارس طقوسا اجتماعية معينة ، وهذه المرحلة الزمنية تتداخل مع الفترة الجرمنتية .

5- مرحلة الجمل (نهاية الألفية من قبل الوقت الحاضر وحتى الماضي الحديث) ، وهي فترة زمنية تلت مرحلة الحصان ولو أنها تداخلت معها جزئيا في بعض الأزمنة التاريخية ، وتتميز مرحلة الجمل بصور هذا الحيوان وهو يحمل المسافرين على شكل خطوط أو نقوش ، وعادة ما تصطحب هذه الصور مناظر لحيوانات أليفة (خصوصا الماعز) وفي بعض الأحيان مشاهد صيد لحيوانات متوحشة ، ويذكر ان أسلوب الجمل يرتبط عادة مع شعب الطوارق أصحاب كتابة التيفيناغ وهي ما نشاهد حروفها في الكثير من تلك المناظر ، ولاشك في ان بعض من مشاهد مرحلة الجمل هذه ذات علاقة بالفترة الجرمنتية وما تلاها من الزمان .

المستوطنة :

وتشمل المواقع المسكونة سابقا وتحتوي على بقايا معمارية وآثار مصنوعات ، وهي في العادة بقايا المباني من الحجارة أو من قوالب البناء ، وهذا المصطلح استعمل في العموم على كافة تلك المواقع بغض النظر عن حجمها وطريقة إنشائها والتي تمتد من عهد الجرمنت إلى الفترات الحديثة، هذا وانه ليس كل القرى التي تعود إلى أوائل العصر الحديث أو حتى إلى العصر الحديث قد تم ذكرها في هذا المعجم رغم ان القرى ذات الأهمية التاريخية

من اجل تسهيل العمل ، تم تسجيل معظم الفقارات على صورة مجموعات من الفقارات رغم اختلافها زمنيا .

المعالم الجنائزية :

وتضم النماذج الإنشائية الجنائزية الغير عادية (وهي غالبا ما تكون معزولة) قرب المقابر المجاورة ، وهي تعود إلى فترات مختلفة شريطة ان تكون تلك النماذج ذات خاصية متميزة مثل القبور الهوائية ، الأضرحة ، أضرحة الأولياء ، وغيرها من المعالم الجنائزية المتميزة ، حيث تم تسجيلها منفصلة .

القبر:

بعض البقايا الجنائزية المنعزلة صنفت كقبر .

المواقد:

أكوام صغيرة من الحجارة المحروقة يعتقد أنها مواقد لمواقع تخييم تعود إلى عصور ما قبل التاريخ هجرت منذ فترات زمنية طويلة ، وهي غير شائعة في وادي الحياة (ألآجال) رغم ملاحظة تواجدها بصورة اكبر على أطراف المنطقة مثل في وادي آروان و وادي تانزوفت .

المواقع الصناعية :

أي موقع به بقايا نشاط صناعي مكثف من غير دليل قاطع على بقايا استيطان طبيعي ، وهذه المواقع تتضمن بقايا معدنية وغير معدنية وفي أزمنة متأخرة توجد بقايا محتملة لصناعة إنتاج الملح .

النقوش : (نقوش كتابية ليبية ـ تيفيناغية – عربية)

نقوش كتابية من تواريخ ولغات مختلفة بعضها منقوش على قطع حجرية منقولة (مثل شواهد القبور) وبعضها منقوش على الصخر الصلب ، ويلاحظ ان النصوص الليبية امتداد للغة الجرمنتيين ونقوش التيفيناغ الخاصة بالطوارق (بعضها قد يكون حديثا ولكن اغلبها يمتد تاريخه إلى قرون طويلة) .

المصنوعات الحجرية:

أداة أو أداتان حجريتان يتم العثور عليها بصورة منعزلة ضمن كميات من الحجارة المبعثرة.

حجريات مبعثرة :

وتضم المدببات حيثما توجد في المواقع التي تتركز فيها الحجريات وتشمل (أدوات حجرية ، انوية .....)

قبور الأولياء :

أضرحة تعرف محليا (بالمرابط) وهي عبارة عن مباني مطلية باللون الأبيض تضم بعض القرابين.

الضريح:

هناك عدد قليل من نماذج معالم الأبنية الجنائزية ذات العلاقة المعمارية بثقافات حوض البحر الأبيض المتوسط ، بيد ان هذه النماذج لم يكن من المؤكد أنها استعملت لأغراض الدفن في فزان رغم تواجدها في المقابر ، وبالنظر إلى انعدام شواهد الدفن أسفل تلك المعالم فإنه من المحتمل أنها استغلت كمعابد مورست فيها بعض الطقوس الجنائزية .

المسجد:

ويعني المساجد القائمة في المستوطنات أو أماكن العبادة الموجودة بمحاذاة المسالك الصحراوية والمحدد بعلامات موضوعة على السطح.

مواقع استغلال:

وتشمل المواقع التي عثر بها على قطع امفورات ومصنوعات حجرية (مثل كسر وحجارة رحى) بدون أية مباني مرئية وهي تعزى إلى مواقع تم استيطانها في العصر الرعوي فيما قبل التاريخ .

مباني أخرى :

وتشمل جميع المباني المختلفة الغير متأكد من هويتها والتي قد يكون لها علاقة بخصائص جنائزية أو استيطانية .

الفخاريات المبعثرة:

كثرة الكسر الفخارية المبعثرة تشير إلى استيطان بشري وتسهم في تفسير احد مظاهر الاستيطان أو النشاط الاقتصادي ، ويذكر أنه عثر في بعض الأحيان على تركز مكثف لكسر فخارية وتم تسجيلها بشكل منفصل عن أي بقايا أثرية أخرى وذلك تحت صنف الفخاريات المبعثرة .

- نوع 5- ب – قبور مربعة مدرجة.
- نوع 5- ج – قبور مضلعة .
- نوع 5- د – قبر بيضوي مدرج .
- نوع 5- هـ- قبر مخروطي مدرج.
- نوع 6 – قبور بسيطة :
- نوع 6 – أ – قبر مرتفع بسيط يأخذ شكل لفافة التبغ .
- نوع 6- ب- قبر مرتفع بشاهد .
- نوع 6- ج – قبر معّلم بحجارة.

من ناحية أخرى تم التركيز على المقابر التي احتوت على معالم جنائزية ذات إشكال هرمية وغيرها من الإشكال المثيلة مشيرين إليها بالمدافن الهرمية، إضافة إلى أنه تم التعرف على بعض المعالم الأخرى التي سجلت منفصلة نذكر منها على سبيل المثال لا الحصر بعض القبور المتميزة ، والقبور الهوائية Antenna tombs ، وأضرحة الأولياء . ان خاصية الآثار الجنائزية في فزان تتمثل في تفرع تلك المعالم في خواصها بعضها عن بعض وهذا ما لاحظناه في الكثير من المقابر ورغم اختلاف بعض أنواع المدافن والدلالات الجنائزية المصاحبة مثل موائد القرابين والمسلات إبان الفترة الجرمنتية فإنه بالإمكان تأريخ ولو بشكل عام معدل الاختلاف في الأنماط الجنائزية التي استعملت في وقت متزامن ، ولو كان ذلك في نفس المقبرة ، ويعد هذا أمرا مميزا لما يوفره من معلومات قيمة عن ماضي المنطقة .

المستوطنات المسيجة :

لقد تم التعرف على عدد من المستوطنات المطوقة بأسوار ليست ذات صبغة دفاعية، ومن ناحية أخرى عثر على عدد قليل جدا من القصور في قلب المواقع الاستيطانية محاطة بسور متماسك البنيان ، هذا ويذكر ان الكثير من قرى المنطقة التي تعود في تاريخها إلى مطلع العصر الحديث كانت عبارة عن مستوطنات مسيجة سواء كان ذلك التسوير عبارة عن جدار خارجي يطوق المستوطنة أو ان الجدران الخارجية لمباني المستوطنة رتبت بطريقة تشكل في مجملها سور خارجي متواصل للقرية به عدة مداخل وهذه الظاهرة معروفة وعامة في القرى الجرمنتية مما يؤكد مدى طول تاريخ هذا النمط من القرى في منطقة فزان .

السياج:

هناك بعض المواقع تحيط بها اسيجة واسعة يوجد في بعضها عدد من المباني والبعض الآخر بدون مباني ، وبالإمكان أيضاً ملاحظة سياج أو أكثر يحيط بقصر ، علما بأنه تم إدراج المواقع ذات السور الواحد المتماسك تحت صنف المستوطنات المسيجة .

مستوطنات المنحدرات :

بنيت معظم المستوطنات الجرمنتية المبكرة على رؤوس جبال أمساك زطافت أو على منحدرات أمساك ، ولعل موقع زنككرة (ZIN 001-003) مثال على ذلك، وهناك الكثير من المواقع المثيلة تم التعرف عليها مؤخرا .

نظام الحقول :

ان الأنشطة الزراعية الحديثة طمست معظم بقايا البساتين ونظام الحقول قديما ومع ذلك هناك القليل من المواقع لا تزال مهمة لإفادتنا بمعلومات دقيقة عن نظام زراعة الحقول في القديم .

الفقارات :

يتمثل هذا النظام السوقي في قنوات مياه تحت الأرض مربوطة بسلسلة من الفتحات الرأسية يتم حفرها أثناء شق القناة ، والفقارة الواحدة تتكون من بئر رئيسي تم حفره إلى المائدة المائية عند سطح المنحدر (وقد يفوق عمقه 40 مترا) إضافة إلى سلسلة من الفتحات العمودية يتجاوز عددها في بعض الأحيان عدة مئات تقل أعماقها تدريجيا موصولة من أسفل بقناة قاعدية يتراوح طولها بين كيلو متر واحد إلى ثلاث كيلومترات ، وهذه القناة تغذي الحقول الأدنى مستوى في الوادي المجاور .

مجموعة الفقارات :

السير في الصحراء ، وفي هذا السياق تم تسجيل العديد من الأكوام الحجرية سواء كانت مفردة أو مزدوجة ، أما مجموعات الأكوام فقد سجلت على أساس أنها مقابر .

* **الكهف** : ويعني كل أنواع الكهوف والمخابئ الصخرية

* **المقبرة** : وقد اعتمدناها في هذه النشرة للإشارة إلى أي مجموعة مدافن أو تشكيلات يشتبه في أنها مدافن سواء كانت منواة بدرجة كبيرة أو متبعثرة

والمخطط العام لهذه المقابر عادة ما يتبع واحد من الأنواع المورفولوجية التالية :

- **نوع** 1: كوم حجارة بسيط مبعثر يسير باتجاه الحافة الجبلية إلى أعلى ، وهو في الأعم الأغلب يعود إلى أواخر الفترة الرعوية أو مطلع العهد الجرمنتي .
- **نوع** 2 : مقابر مبعثرة بمدافن عنقودية Clustering وبعض أكوام المدافن البرميلية والشواهد والموائد البدائية واغلبها يعود إلى بداية العهد الجرمنتي.
- **نوع** 3 : مقابر على الحافة الجبلية بقبور ذات إشكال مختلفة من قبور بئريه وبرميلية ومربعة ومدرجة مع شواهد وموائد قرابين يعود اغلبها إلى أوج العهد الجرمنتي الكلاسيكي
- **نوع** 4 : مقابر بسيطة تعود إلى أوج العهد الجرمنتي الكلاسيكي .
- **نوع** 5 : مقابر منواة بأكوام حجرية كبيرة وقبور برميلية وهي في العموم تعود إلى فترة مطلع المعمار الحضري والفترة الجرمنتية الكلاسيكية .
- **نوع** 6 : مقابر طولية تعود عموما إلى الفترة الجرمنتية الكلاسيكية والمتأخرة .
- **نوع** 7 : مقابر منواة في مركز الواحة بصفوف طولية ، تعود إلى الفترة الجرمنتية الكلاسيكية .
- **نوع** 8 : مقابر منواة في مركز الواحة ، برديم مكثف تعود في الأعم إلى الفترة الجرمنتية الكلاسيكية والمتأخرة .

وقد لاحظنا ان بعض المواقع الجنائزية التي رصدها (تشارلز دانيلز) تحتوي على العديد من أنواع المقابر المختلفة ربما تمثل مراحل مختلفة من التاريخ ،ومن هنا يحتاج الأمر إلى المزيد من الدراسة الميدانية لإيضاح التباين بين أنشطة كل فترة تاريخية في مواقع مدافن استغلت لفترات طويلة .

أما المدافن المتواضعة فقد أقترح تصنيفها على النحو التالي: التالي :

- نوع 1 – أ – مرتفع من الحجارة .
- نوع 1- ب – حجارة مصففه.
- نوع 1 – ج – حجارة مطرفة.
- نوع 1- د – حجارة ذات فوهة .
- نوع 2 – مدافن ذات علامات عمودية :
- نوع 2- أ – دائري بسيط أو عمود بيضاوي.
- نوع 2- ب – عمود تلف به دائرة حجرية .
- نوع 2 – ج – عمود برأس.

- نوع 3 : أكوام برميلية وقبور برميلية :
- نوع 3- أ – كوم حجارة برميلي.
- نوع 3- ب – قبر برميلي الشكل .

- نوع 4 : أكوام حجرية مبنية أو قبور مربعة أو مستطيلة الشكل :
- نوع 4 – أ – كوم حجري مبني على شكل مربع.
- نوع 4 – ب – قبر مربع الشكل .

- نوع 5 : قبور مدرجة :
- نوع 5- أ – قبور دائرية مدرجة .

مقدمة

قام (تشارلز دانيلز) بأول زيارة إلى فزان عام 1958 وشرع في مشروع بحثه الموسع عام 1965 متمما سبعة مواسم عمل ميداني قبل ان ينتهي من أبحاثه تماما في عام 1977 (وقد عمدنا إلى الاختصار الرمزي CMD عند التطرق إليه في هذا العمل) وفضلا عن حفرياته قرب جرمة قام بمسح العديد من المواقع ووضع خرائط لها مكونا ملفا موسعا من المعلومات تؤلف الآن جانبا مهما من معلومات مشروع مسح فزان (1997-2001) وهو ما نشير إليه الآن بـالرمز (FP) وهذا المعجم يقدم نتائج موجزة لكلا المشروعين مع فصول إضافية للأصناف الرئيسية من اللقى التي تم الكشف عنها أثناء تنفيذ المشروعين ، وسيتكون العمل من 1 إلى 39 فصل بأصناف مختلفة من اللقى إضافة إلى الفصول من 40 إلى 44 والتي تتضمن تحاليل تاريخية لتلك الموجودات نوجزها فيما يلي:

الفصول من 1 إلى 39:

لقد اتخذ (تشارلز دانيلز) أسلوبا تنظيميا بشأن تسجيل المواقع في فزان ينطلق أساسا من رموز لثلاثة حروف (مشتقة من اسم المكان) إضافة إلى الأرقام ، فنلاحظ ان الرموز GER001 تعني مدينة جرمة القديمة ، والرموز GER002 تعني سانية جبريل ، وقد تم اعتماد هذا النظام في مشروع مسح فزان FP وإجمالا هناك 39 موقع فرعي في وادي الآجال (وهو ما يعرف أيضاً بوادي الحياة) علاوة على 10 أماكن إضافية ترتبط بأماكن تم اكتشافها في ربوع أخرى من فزان .

من ناحية أخرى نشير إلى ان الخرائط الأصلية لمواقع وادي الحياة (الآجال) قد تم إعدادها من قبل قسم المسوحات بجامعة (نيو كاسل) وهي تعتمد على خرائط لصور جوية تم أخذها على مرحلتين (1958-1968) وفي عام 2000 تم إخضاع تلك الخرائط إلى معالجة رقمية بجامعة (ليستر) حيث زودتنا بالخرط الأساسية لمنطقة وادي الحياة (الآجال) وتجدر الإشارة هنا إلى أنه ولعدة أسباب ان جميع الإحداثيات الجغرافية في هذا المعجم يجب ان تؤخذ بشيء من الحذر إذ أنه لم يكن في المقدور تحديد أو إعادة تسجيل جميع المواقع التي تم التعرف عليها من قبل تشارلز دانيلز .

لقد احتوى هذا المعجم على ما يزيد عن 900 موقع ولكن في الإجمالي الحقيقي للبقايا الأثرية في المنطقة بدون شك أكثر من هذا العدد بكثير، وفي هذا السياق كان هدفنا إعداد أساس دراسي يربط معرفتنا الأثرية الحالية للمنطقة مع الإجابة على الاستفسارات القائمة بشأن تاريخها ، فهناك عدد من الموضوعات المتعلقة بماضي المنطقة لاتزال في حاجة إلى ترتيب وفهم ، إذ يلاحظ ان معلوماتنا عن ماضي الإقليم غير متوائمة مع معلوماتنا الكثيرة عن منطقة جرمة التي خضعت لعدة تنقيبات مكثفة ، وكلما ازدادت أعمال البحث الميداني المفصل كلما عثرنا على المزيد من المواقع الأثرية ، وبذلك ندرك ان هذا المعجم ما هو إلا عمل يبين معرفتنا بالمواقع الأثرية في المنطقة أكثر من الواقع الفعلي للاستيطان القديم في تلك الربوع ، والذي يجب ان يوضع في الاعتبار كأساس يتأثر بالأنشطة الاقتصادية المعاصرة التي تشهدها المنطقة ، علما بأن هناك مناطق لم يتم الكشف عنها اثريا من اجل تقدير قيمتها الأثرية مثل منطقة وادي الشاطئ شمال فزان الذي رغم تمتعه بشريط متتابع من الواحات إلا أن السجل الأثري بخصوصه جد فقير ، فاغلب الظن ان العمل الميداني المفصل في هذا الوادي سيسفر عن الكشف عن مواقع مماثلة لما عثر عليه في وادي الحياة (الآجال) .

اصطلاحات تسمية المواقع:

*** القبر الهوائي**:

شكل من إشكال القبور المتميزة التي تعود إلى العصر الرعوي بعضها يعرف بمدافن V وهو نمط معروف في أرجاء الصحراء ، وأشهر النماذج شيوعا يتمثل في مدفن من كوم حجارة يتفرع منه صفان من الحجارة يتجهان في اغلب الأحيان شمال شرق وجنوب شرق.

*** كوم – أكوام حجارة**

يعد هذا النوع أكثر المدافن انتشارا في الصحراء ، فهو عبارة عن كوم من الحجارة توضع على الجثمان ، وقد لوحظ في بعض المناطق وجود أكوام من الصخور كانت تكدس لأغراض أخرى مثل علامات يستدل بها أثناء

آثـــــار فـــــــــزان

المجلد الثاني

معجم مواقع ولقى أثرية

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منشورات مصلحة الآثار – طرابلس

الجماهيرية العربية الليبية الشعبية الاشتراكية العظمى

جمعية الدراسات الليبية – لندن